RAILROAD GAZETTE

SATURDAY, APRIL 24, 1875.

Contributions.

The Springfield Bridge—A Reply to Mr. Philbrick.

To the Editor of the Railroad Gazette:

Mr. Philbrick begins his last letter by complaining of alleged errors of mine with reference to my information about the specifications and details of the Springfield bridge, and Mr. Philbrick concludes his letter by saying that the statement published in the *Railroad Gazette* by one Mr. Bartlett he never happened to see, and does not know who he is.

My first article on the Springfield bridge did contain complaints about the insufficiency of the data given by Mr. Bartlett, and if Mr. Philbrick had not defended and thereby endorsed these data, it would have been unnecessary for me to write my last reply or this one.

That I had to assume that Mr. Philbrick had read Mr. Bartlett's paper is manifest, and it is more so when we read what he wrote in the defense of the admirer of the Springfield bridge. This reads as follows: "Mr. Bender calls for more details than were then given, which Mr. Bartlett can doubtless furnish. But some of the questions are already answered by Mr. Bartlett's previous figures, viz.: Mr. Bender asks whether long tons or short tons were spoken of. Mr. Bartlett speaks of the total dead weight as 354,115 lbs., or 177.06 tons, which certainly means short tons, as is customary in this country."

In fact, how could Mr. Philbrick answer my letter without having read Mr. Bartlett's paper, too?

Hence, if Mr. Bartlett's figures are incorrect, and if I assumed them to be correct, it is his and not my fault, for he much better would have corrected his errors.

Also, it is not my fault when Mr. Philbrick finds my last reply too long, for it is much more difficult to prove than to make an assertion.

So much for the personal question; but what I actually found worth discussing was and is still:

(1.) The report of Mr. Bartlett was incomplete, incorrect, though enthusiastically in favor of lattice bridges. This report does *not* give what we should claim of communications of that kind, viz.: the means to judge ourselves whether its object is really worth taking notes upon.

(2.) The Springfield bridge is a lattice bridge of the ordinary kind; more especially it is not particularly suited to serve as a specimen of good bridge engineering.

(3.) The detail of attaching in lattice bridges ties and posts to the unvaried vertical plates of U-shaped chords is very improper as long as the strains are not at least brought down in these plates by sufficient reinforcing plates arranged for the uniform distribution of strains.

This faulty detail is to be found at every joint of the Springfield bridge, which assertion I make again, and hope this time to finally dispose of. These were the original points of my discussion. Contrary to my intention, Mr. Philbrick has put on the platform the discussion of two other questions, viz:

(4.) Whether a properly constructed lattice bridge (that is, one which, with the application of the book rules, comes up to the specification), can commercially compete with a properly constructed pin-jointed bridge.

In this regard, the value of the Springfield bridge, such as it actually is, will serve to illustrate this question.

(5.) Whether the assertion can be proved that pin-jointed bridges without continuous top chords do not as well withstand impacts, from trains running against their trusses, as can be done—so it is claimed—by lattice bridges.

The first of these points is now disposed of, for Mr. Philbrick also gives up Mr. Bartlett.

I had taken from his data the sketch of the bottom chord in the center panels, which, as I have convinced myself at the spot, is not correct. Further, from Mr. Bartlett's notes I got the strain of 8,000 pounds per square inch of the compression members, also the cubic contents of the floor timber, and finally the live load of 3,000 pounds per foot of each track.

We shall learn soon that Mr. Bartlett is not incorrect in all points, for Mr. Philbrick himself errs materially in various respects.

(a) He is mistaken in the quantity of the floor timber, and virtually Mr. Bartlett is right. In order to ascertain which statements about the Springfield bridge are true and which are not correct, I have inspected it and have measured the sizes.

I find the ties to be 7⅛×8 in. by 12 ft. long = 80 feet B. M., per lineal foot, and the guard rails contain 10 ft. B. M. per lineal foot. Virtually this difference of 10 ft. from my earlier statement does not disprove it; for, the stringers being 6 ft. apart, the ties are very light, which is favorable toward reducing the dead load, and consequently the weight of iron of the bridge. The ties extend 3 feet on each side of the stringers, and near their ends the light guard rails are attached, so that about 3-4 feet of the length of the ties are ineffective and constitute only a dead weight of the floor. The stringers I should place 7 feet to 8 feet apart and I should pack the ties closer together, and should re-enforce them by heavy guard rails. This construction would bring the cubic contents up to 5 ft.=60 ft. B. M., which Mr. Philbrick admits should be on the floor.

(b) Mr. Philbrick is mistaken in his statement as to the strength of the iron floor.

He writes that the specification *did call* for and the bridge was *built* for supporting a load of 30 *tons* on *four driving* wheels on the floor system, with the same limit of strains as upon the chords, viz.: 10,000 *pounds* per square inch of *net section in tension* and 9,000 *pounds* per square inch gross section in compression.

The panels are about 12 feet long (as per Mr. Philbrick's own limitation), and the stringers consist of 10¼ in. rolled beams (Mr. Bartlett is correct herein). Each driver gives 15,000 lbs. of pressure. The moments of a stringer are as follows:

From dead load, $\frac{12' \times 12' \times 12'' \times 130 \text{ lbs.}}{8} =$ 28,000 pound inches

" live load, $72'' \times 7{,}500$ lbs. = 540,000 " "

Total moment = 568,000 " "

This moment under the compression of 9,000 lbs. requires a moment of resistance of the beam = 63 cubic inches.

(Value, D $\left(a + \frac{a'}{6}\right)$ of Phœnix "Useful Information").

Actually the moment of resistance of the 10¼" beam is = 32.4 cubic inches; consequently the compressive strain is equal to the nice figure of 17,800 pounds.

This is the actual compressive strain of each stringer, as calculated from the specification which Mr. Philbrick in his last reply has given us.

The proper beam that would come up to this specification should be of the light 15" pattern, 50 lbs. per foot, the moment of resistance of which is $0.3 \times 15'' \times 15'' = 67.5$.

If Mr. Philbrick's specification for 15,000 lbs. pressure per driving wheel is not an error, he certainly is mistaken in asserting that the bridge *was built* for this panel load. Now let us compare my statement that the bridge floor was specified to be built for 3,000 lbs. per foot, agreeing with Mr. Bartlett.

We have the moment $\frac{(1{,}500 \times 130) \text{ lbs.}}{9{,}000} \times \frac{12' \times 12' \times 12''}{8} = 39.2$.

The stringer, being a 10¼" beam, has the resistance 32.4, and is consequently still too weak to come up to my statement of the panel live load.

If I have made an erroneous statement, I have over and not underrated the strength of the floor of the Springfield bridge.

The floor is not even constructed to carry a load of 3,000 lbs. per foot with the strains specified by Mr. Philbrick, for it only carries per lineal foot: $\frac{32.4}{39.2} \times 3{,}260 - 260 = 2{,}680 - 260 = 2{,}420$ lbs.

But I have asserted that the floor of the Springfield bridge is too light, and this is precisely what I have demonstrated.

Mr. Bartlett's statement, however, as to the weight of the stringers is correct.

I continue with the cross-bearers of the Springfield bridge. This structure may be said to form a part of the depot, and is much used by the switching engines. Its floor, therefore, should be very strong, and should not be neglected. though Mr. Philbrick thinks the lower speed in practice near the depot should excuse a saving in this regard.

The cross bearers of this bridge rest on the 12" plates of the bottom chords, and are imperfectly connected over the central chord, which can *not* allow a claim for continuity Moreover, in this case, the maximum moment would be above the central chord, and the result of this supposition would be worse than that of the following calculation:

The live load of 3,000 pounds on a panel of 12 feet would give $1{,}500 \times 12'' = 18{,}000$ pounds. From dead load we have still 2,000, and thus we get the moment:

20,000 pounds × lever 54" = 1,080,000 pound inches.

The prescribed tensile maximum strain is 10,000 pounds per net area; we therefore need a moment of resistance:

R = 108 cubic inches.

The cross bearer has the measured section of 16 1-6 square inches, is composed of a web 16¾"×5-16" and of four 3" angles. The rivet rows being 13¼" apart, the moment of resistance, including the stiffness of the angles, but excluding the loss by rivet holes, is = 87 cubic inches, when 108 would be required.

In my previous letter (agreeing with Mr. Bartlett) I have stated that the floor of the Springfield bridge was constructed for a load of 3,000 lbs. per foot. I may have been incorrect in saying that such was the specification.

In fact I have again overrated, not underrated, the actual strength of this bridge floor, for it is constructed only to carry $\frac{87}{108} \times 20{,}000 - 2{,}000 = 16{,}100 - 2{,}000 = 14{,}100$ lbs. This is equivalent to $\frac{2 \times 14{,}100}{12} = 2{,}350$ pounds per lineal foot.

Now we calculate what the maximum strains would be in the cross-bearers, if Mr. Philbrick's assertion were correct, that the live load for the floor, stipulated at 60,000 pounds on four drivers, had been adhered to in the execution of the work.

I refer to the "Keystone Album," page 22, and select the wheel base of a four driver switching engine, most favorable to Mr. Philbrick's statement. This base is 7.6 feet. Place this engine centrally over a cross-bearer, and you have

$$2 \times \frac{12' - 3.8'}{12'} \times 15{,}000 \text{ lbs.} = 20{,}500 \text{ lbs.}$$

Add concentrated load from floor itself = 2,000 lbs.

Concentrated loads = 22,500 lbs.

Place the same wheel base over the cross-bearer, so that one wheel is just above it, and you have again

$$15{,}000 + 2{,}000 + 15{,}000 \times \frac{4.4}{12} = 22{,}500 \text{ lbs.}$$

Moment, therefore $22{,}500 \times 54'' = 1{,}215{,}000$ pound inches.

The moment of resistance of the cross-bearer being 87 cubic inches, the tensile maximum strain is,

$$= \frac{121.5}{87} \times 10{,}000 = 14{,}000 \text{ pounds,}$$

instead of 10,000 as prescribed.

In fact, the tensile maximum strain of floor beams and stringers should be less than the prescribed chord strain, and this is done or recommended:

(a) In Europe, where 8,600 lbs. is used, or where, as by the Austrian law, this point is taken care of in the specification by a higher live load;

(b) By Messrs. Chanute and Morison, of the Erie Railroad, who specify for 20 per cent. more strength;

(c) By any first-class bridge company in this country.

Therefore my assertion, Mr. Philbrick's objection notwithstanding, is more than fully sustained.

Mr. Bartlett's figure however of 25,200 pounds for the weight of cross-bearers comes very near to my figure derived from actual measurement.

(c). I have stated that the height of the truss was onerously discriminated in favor of the lattice bridge. Mr. Philbrick's objection notwithstanding, I uphold this assertion, for before my eyes I have his very specification limiting the height from 21 to 24 feet. If a bid was tendered of a bridge two feet higher, it was because the bidder considered this part of the specification not suited for his system. I also learn that Mr. Philbrick fixed the panel length to a maximum of 12 feet, and I believe this also to be true, because the prescribed height answers to it and it is favorable to the lattice plan.

Having now disposed of some serious mistakes on the part of Mr. Philbrick, I have to deal with a number of minor items:

(d). From the specification before me, which *except live load* was accepted by Mr. Philbrick, I learn that the party mentioned already had offered certain guarantees for the quality of the iron. Mr. Philbrick accepted this part of the specification, but it is still a question whether the same specification was also fully enacted from the party that obtained the contract.

The really valuable claims of this part of the specification are as follows:

Reduction of area at breaking point average 25 per cent.

Average ultimate permanent elongation 15 per cent.

Cold bends without signs of fracture from 90–180 degrees.

Since Mr. Philbrick only tells us about ultimate strength and limit of elasticity, I presume not much good is known about the quality of the iron in the Springfield bridge as to the other points, and it is my conviction that not one of its bars or plates will come up to the quality as offered by that other party.

(e) Discrepancies in proportioning top chords.

The specification prescribed to the party building the American pin bridge included the application of Gordon's formula. Mr. Philbrick tells us that he specified 9,000 pounds per square inch to the party which received the contract. But herein we must recognize a very great help for the lattice bridge builder, for if a discrimination could have been made it is quite certain that the application of the Gordon formula should have been enacted rather from the builder of the lattice bridge, because the ⌣ shape of the chord section, as it actually is, makes a very weak compression member.

The reason for this fact is that the 12" × ⅛" and 12" × 7-16" vertical plates not being by any contrivance prevented from buckling out sideways, properly speaking, do not admit of the application of the formula. If we do apply this formula anyhow, we again *overrate* and not *underrate* the strength of the top chords of the Springfield bridge.

Moreover, the moments of inertia of these U shaped chords are very small:

We take, for instance, the central top chord of middle truss, when we find it not quite 2,300 (expressed in inches), while the same chord section in shape of a 6 segment Phœnix column, would have the moment of inertia 9,200, or more than four times as much.

With Gordon's formula applied to the U shape, I have calculated the *specified strain* per square inch of the middle top chord of central truss, and find it

$$\frac{36{,}000 : 4}{1 + 0.7} = \frac{21{,}200}{4} = 5{,}300 \text{ lbs. per square inch.}$$

Mr. Philbrick, however, has allowed the lattice-bridge builder to use 9,000 lbs., or to save 70 per cent. of metal, while he prescribed for the user of the Phœnix column:

$$\frac{9{,}000}{1 + \frac{192 \times 12}{3{,}000}} = 8{,}600 \text{ lbs.}$$

I also have calculated the compressive strain per square inch which should have been used if Gordon's formula had been applied by the lattice-bridge builder at the 4th panel of central truss. It is this:

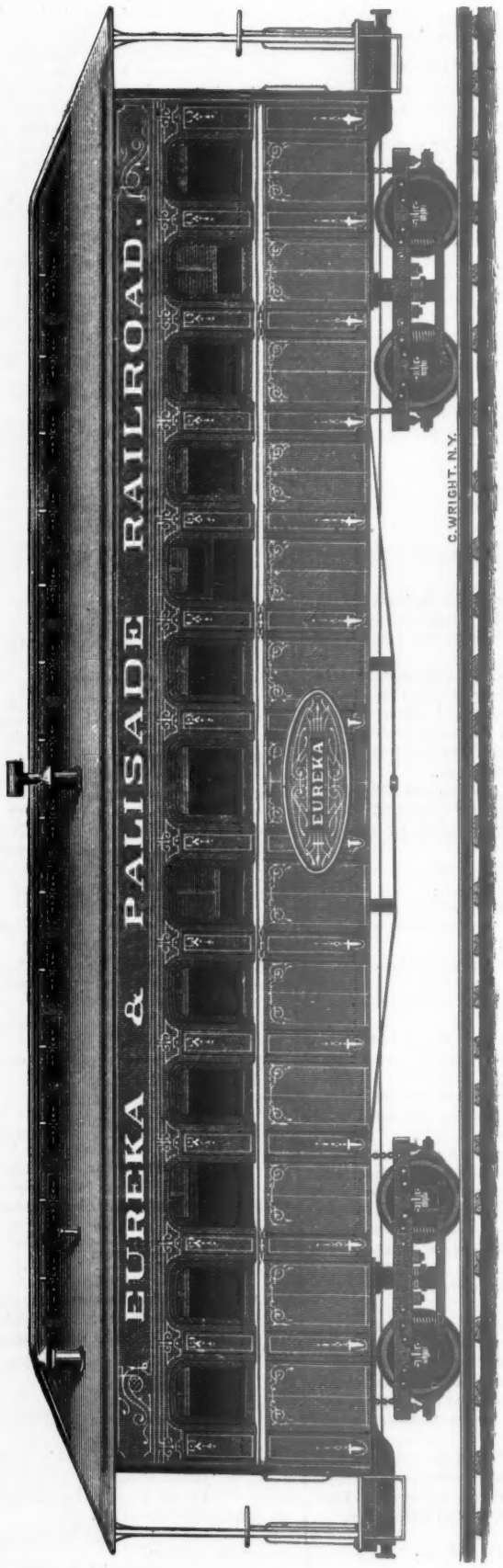
$$\frac{36{,}000 : 4}{1 + 0.58} = \frac{22{,}500}{4} = 5{,}625,$$

which is 2,975 lbs. less than Mr. Philbrick prescribed to the user of the Phœnix column.

On the average, according to this comparison, the top chords of the Springfield bridge are over 50 per cent. weaker than was specified to the other party, to which the use of the Gordon formula was prescribed.

(f) Tumbling down of the Waterbury and other bridges in this country or Peru.

In my letter, Mr. Philbrick having mentioned that he had not heard of any lattice bridge having fallen down, I drew his attention to two bridges in Peru. I did not place any value whatever upon this fact, since I did consider that the present subject of discussion was the Springfield bridge. Therefore I did not enter into details, nor did I even add that only a short time ago a full description of this failure was given in the *Railroad Gazette*, which I thought its readers knew fully, so that it might be only necessary to mention it in order to fresh up their or Mr. Philbrick's memory. But Mr. Philbrick very sharply uses my next following remark, that quotations of failures of bridges should be accompanied by the particulars as to causes, etc., and he thus endeavors to represent me as illogical. In fact I did not want to be too explicit and I trusted that Mr. Philbrick would assume my being acquainted with the first principles of



THREE-FEET GAUGE PASSENGER CAR, by Billmeyer & Smalls, York, Pa.

logic and would simply insert between the lines a little *scilicet* that I forebore to use the fact of these two lattice bridges as an argument against Mr. Philbrick, who already has to defend more than he can. Mr. Philbrick has not been equally liberal, for he at once rejoins with another bridge that was knocked down, but also without giving the particulars.

I admit that the Peruvian bridges were badly designed or executed, and I assert that any of the pin bridges that tumbled down, or were knocked down, were either improperly designed or badly executed.

Also the Waterbury bridge may fall down again if the ties are still of the bad material, etc., which we condemn, and when it does fall down I shall not be responsible for it.

(*g*) Ample warning of lattice bridges before they fall down. Properly executed pin bridges offer precisely the same guarantee. Mr. Philbrick here can only allude to eyebars failing in the weld. But what will he answer when every tensile part is made weldless, as it should be in first-class bridges, or when the bars are first upset and then welded under proper management to hammered eyes with an excess of 50 per cent. of strength in the weld and then finally tested each to say 25,000 lbs. per square inch?

(*h*) No other reflection of Mr. Philbrick's proves more that he has not even yet understood the question of accumulation of strains at the joints than the following one, which he makes with reference to eyes of eyebars:

"This remark (the lion's share of strain near circumference of rivet holes) seems to be applicable to strains around the pins in eyebars, especially when those pins are several inches in diameter, as required in order to avoid great length of pins."

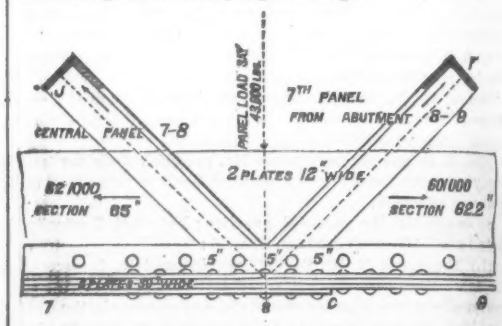
Mr. Philbrick must know that precisely from the same reason which increases the strain at the circumferences of rivet holes the area of the eye across the diameter of the pin center is increased to from 30 to 50 per cent. over the area of the shank. I say from 30 to 50 per cent., because the addition depends also on the shape of the eye and on the section behind the pin. Suppose the bar to be 5″ wide, the section of the eye in its center to be $5'' + \frac{5''}{2} = 7\frac{1}{2}''$, then the direct parallel strain will be reduced to $\frac{5}{7\frac{1}{2}} \times 10{,}000 = 6{,}666$ lbs. per square inch. This strain, as experiments prove, and provided the eye is properly shaped, by the shearing strain and by the moment of flexure is brought up to 10,000 lbs. per square inch.

(*i*). Hundred rivets in Mr. Philbrick's bridge to transfer one inch of section.

In fact, at the middle bottom joint of central truss of the Springfield bridge there is also a joint at chord plates, which has to bear its own strains, and may have 100 rivets, which of course I did not count.

Having now disposed of this last objection, I return to my position.

No. 3. Referring to accumulation of strains in the 12″ vertical chord plates of the Springfield bridge.



I have asserted that the diagonals 8 F are attached to iron which must be considered as being strained to 10,000 pounds per square inch, notwithstanding the supposed relief caused by the projecting plate, 8 c. I uphold this assertion, but for the sake of peace I shall now temporarily assume that the extension of the plate, 8 c, has caused already a perfectly uniform distribution of strains over the cross section of that part of the bottom chord to which 8 F is attached. It will answer our purpose if we make use of Mr. Bartlett's figures of the strains in the bottom chords of the central truss. We divide the total strain of a chord by the total strain of the next heavier chord and multiply by 10,000 pounds Thus we get the following (asserted) uniformly distributed chord strains:

9,856, 9,430, 9,000, 8,390, 7,656. 6,2 0 pounds.

Add to these the horizontal component of the calculated strain caused by the most exposed rivets in diagonals:

equals $0.7 \times 10{,}000 = 7{,}143$ pounds,

and you get the respectable strains at the joints of:

16,999, 16,573, 16143, 15,533, 14,779, 13,343 pounds,

which, of course, are only the calculated regular theoretical ones, the actual strains probably being much higher.

Mr. Philbrick emphatically objects that the strain caused by diagonal 8 J must be *subtracted, not added*, to the chord strains of 10,000 pounds, and thus thinks he can put me *ad absurdum*.

Suppose the diagonal systems to be independent of each other and hinged, then if the bridge were fully loaded the tie 8 F would have to transfer the shearing strain of 9-15ths and 8 J would have to transfer the shearing strain of 6-15ths of one panel load. The actual tie strains would be

$9\text{-}15 \times 46{,}830 \times 1.41 = 39{,}618$ for 8 F, and
$6\text{-}15 \times 46{,}830 \times 1.41 = 26{,}412$ for 8 J.

The horizontal components will be

$9\text{-}15 \times 46{,}830 = 28{,}098$ for 8 F, and
$6\text{-}15 \times 46{,}830 = 18{,}732$ for 8 J.

The chord strain in 8—9 being found 615,034 lbs. (by Mr. Bartlett), what is the strain in the central panel 7—8? To this end we *subtract* the *horizontal components* of the *ties* 8 *F and* 8 *J* and *add* the surplus to the chord strain of 8—9, which Mr. Bartlett gives as 615,034 lbs. (My chord strains were calculated according to another formula.) This difference is

$$\left(\frac{9}{15} - \frac{6}{15}\right) \times 46{,}830 = \frac{46{,}830}{5} = 9{,}366 \text{ lbs.}$$

and $615{,}034 + 9{,}366 = 624{,}400$ lbs.,

which is precisely what Mr. Bartlett gives.

Now the strain of 26,412 of diagonal 8 J being already *once subtracted*, Mr. Philbrick can *not subtract* for the second time.

In order to still more convince, I refer to the subjoined figure:

A string 7-8-9 is strained already by weights of 615,034 pounds, suspended from pulleys. In A and B diagonals with strains as indicated are attached to this string, and the vertical components of these diagonals are taken care of by other weights. The horizontal components, however, are pulling in opposite directions, and partly annihilate each other. The part A B has to carry therefore 615,034, 18,732 and 9,366 pounds. In B the strain 18,732 lbs. is absorbed, and the string 7 B has still to carry the difference = 9,366 lbs. In

order to take care of this additional strain the original string, which was strong enough to carry 615,034 pounds, must be reinforced, and this in the bridge is done. But for the strain 18,732 lbs., which is in full force from A to B, no *extra addition* has been made in the bridge. This strain, 18,732 lbs., does arise from the diagonal B J.

And now what I have said, and what Mr. Philbrick did not fully understand, was this:

"Again even this at the best trifling aid (from the projecting flange plate 8 C) does *not* apply to the diagonal 8 J, where even Mr. Philbrick cannot help admitting that the strains caused by the rivets of the diagonal must be *added* to the supposed maximum of 10,000 lbs."

Mr. Philbrick wants to *subtract it*, in other words he says that the part A B which we found strained to (615,034+18.732 +9,366) lbs. must be proportioned to (614,034—18,732+9,366) pounds.

It is now manifest that Mr. Philbrick did *not* understand the nature of the strains in the joints of his bridge. In fact, in no part of the Springfield bridge, nor in any part of a lattice bridge which I know to have been built under Mr. Philbrick's superintendence, as far as I have seen it, can any proof be found that Mr. Philbrick, previous to my drawing his attention to this point, has appreciated the importance of the investigation of the strains at the joints of lattice bridges.

Close by the Springfield bridge, at the other end of the depot, is a small lattice half-through bridge, quite new, to judge from appearance, and, as I presume, built under the auspices of Mr. Philbrick, which has no gussets relieving the strains at the joints, and I have in my possession the drawings of another bridge of Mr. Philbrick's own design, which has also no "relieving gussets." These drawings do not prove that it is Mr. Philbrick's "custom to reinforce the chords wherever they appear to need it," or else he considers the accumulation of strains at the joints as not appearing to warrant a reinforcement.

Having disposed of all questions except No. 5 we can sum up and can ask:

What is it really that makes the lattice plan commendable in the eyes of many engineers?

Is it because it admits of the application of strict science,* or because it is very simple in design and execution? Is it because the execution is very reliable, or because any parts completed in the shops can be properly examined and tested? Or is it preferable because it permits of the use of the most suitable and most economical material both as to shape of section and quality when compared with the office of each member, or because the material is symmetrically distributed around the center lines of gravity, or because bridges on this plan offer less surface to wind and decay by rust? Or because these can be erected more easily? Or are they perhaps the most economical, all things considered?

We answer with no. Especially we remark that in every instance, when a lattice bridge is nearly as light as a well designed pin-jointed bridge designed on the same specification, or when the price is less than the price of one of these, I say that in every instance of this kind railroad presidents have *not received* what their engineers thought they could promise, and that in every instance of this kind less material is used than required, or that it has been of poorer quality, or that bad workmanship or cheap design has been applied, and that considering the actual strength of such bridges they are very expensive indeed.

Small weight, less complicated manufacture, and consequently lower price have scarcely ever been earnestly claimed as the specific merit of lattice bridges, and the only claim which has been raised very loudly refers to the alleged resistance of lattice bridges in case a train should run against their web.

This is the substance of our last question, No. 5, and I assert that no proof whatever is given why a lattice bridge should better withstand impacts from trains than a pin-jointed bridge of proper construction and execution. That pin-jointed bridges of improper construction or execution may be liable to failure from such causes is not denied. But I assert that small riveted structures may just as well be thrown down into a river in their entirety.

Also, I have lately seen riveted girders of such construction (though conforming to rules and formulæ) that already under the process of unloading them from the cars 8 out of 40 pieces of them broke and became utterly useless. Any train that will run against the rest of these girders I consider sure to cause the failing of the structures. I have also seen wrought iron bars, which when thrown from the railroad cars broke into several pieces. They may have shown a strength of 50,000 lbs. per square inch and perhaps also a high elastic limit. Lattice bridges built with such iron will not be very strong against impacts.

Again, any bridge with weak, narrow wooden floor, the ties wide apart when only proportioned to stand static strains, may let a train through.

On the other hand, we have also a proof that a pin-jointed bridge did not let a train through which had left the track, and to show this I quote a passage from a number of the *Railroad Gazette* of last year:

"A train of freight cars, crossing the new bridge at Albany, at the rate of 20 miles an hour, was thrown from the track by a brake block falling down. The force of the blow against the trusses of the bridge tore off the sides of two of the cars, bent 2¾" round rods, and pushed one of the posts clear out and into the river, yet the bridge still continued to carry trains, with very little visible deflection, a temporary post of wood was inserted, and as soon as possible a new Phœnix column of iron was put in the place of the old one, all without delaying trains or trestling up the bridge. Could riveted lattice have done any better?"

All we want in pin-jointed bridges to make them equally safe, if not more safe than the best riveted structure in case of blows from whole trains, are:

Strong nuts securing the pins, sufficiently long and strong tenons at the joint castings when used, and strong lateral and portal bracing.

In fact, under these conditions the iron being concentrated in masses withstands impacts better than the diffused parts of lattice bridges. Again, the tensile iron in pin-jointed bridges, being more ductile than common plates and angles for the most part used in lattice bridges, will withstand blows better than these, and the same can justly be said of the posts and chords, when connected by castings of proper proportions, of proper material, and provided with long and strong tenons.

Any of the failures of pin-jointed bridges asserted to arise from their lesser resistance against blows from whole trains must first be reported in their details, that we may be able to judge ourselves whether it is true that the system itself is the cause of such accidents.

Before this has been done, I maintain that any broken casting can be traced back to bad design or bad execution, and that any of those failures must be ascribed to the same causes.

C. BENDER, C. E.

*Mr. Bartlett asks whether I can mathematically prove that riveting ties, chords and posts rigidly together does alter materially the reliability of the calculated strains. My answer is this: Mr. Bartlett can with equal logic assert that he has invented the perpetuum mobile or has discovered the Philosopher's Stone, and then demand of me to disprove his assertion. When he recommends the lattice plan he also must prove that its principle is reliable, or else he dictates us to believe in a mere dogma.

Draughtsmen in American Railroad Shops.

APRIL 13, 1875.

TO THE EDITOR OF THE RAILROAD GAZETTE:

In your issue of March 13 I notice that one of your correspondents takes exception to my statement that "draughtsmen are unknown in American railroad shops." Now, while I am very pleased to see any just criticisms on what I have stated, I think it a little hard to be credited with statements not contained in my letter. "Your old friends, Mr. Editor, who are master mechanics might justly be surprised"—and I may add indignant, too—if I, one of their number, should rate *them* as "mere copyists." Allow me to assure Mr. Cushing that I rate the master mechanics of America as highly as those of any country in the world, and in my letter describing my trip to England, I think I gave expression to this feeling.

What I regretted was, that it is not customary to allow the master mechanics to employ draughtsmen of real ability.

My statement may have been strong when I said that "draughtsmen were unknown;" but in a somewhat large acquaintance among master mechanics, both in the East and West, I know of very few who employ skilled designers, and a large number of the best known master mechanics of the country have expressed themselves very strongly to me on this point, regretting that, as a rule, railway managers do not appear to see the economy of paying a sufficient salary to secure a man capable of attending to details in design.

A master mechanic has so many duties to perform that it is almost impossible for him to attend to more than general principles in designing, whereas I hold that there is sufficient scope for one man's undivided attention in keeping the details of the engines up to modern standards. Supposing the English and the American master mechanics to be equals in point of mechanical ability, education and intelligence, the English have this advantage: they are allowed and expected to keep a competent designer, who gives his whole attention to perfecting the design of the engines. Records are kept of all breakages, and as experience suggests improvements they are made, drawings are sent to all other shops, and the improvements are universally carried out. Then, as alterations are made in the details, tools are designed for producing those parts in the cheapest manner, and when new engines are designed, the drawings of all former engines, with full records of their performance, are at hand for the guidance of the master mechanic.

When engines are to be built in private shops, complete sets of drawings are prepared, in which every bolt and nut, even, as shown, and the standard adopted by the master mechanic rigidly adhered to.

There may be some instances in this country where a similar system is in vogue, but I know of too many where master mechanics are grudged anything but a young apprentice, or a clever pattern maker, to do the necessary drawing; and most of the drawings requiring any real design have to be of their own production. The consequence is, that full sets of drawings are rarely at hand. Foremen at outside shops are apt to introduce alterations without consulting master mechanics, and regular standards can scarcely be thoroughly introduced.

I think that this want of system has a tendency to depreciate the true position which our master mechanics from their ability, and from the immense interests dependent upon their judgment, are entitled to hold in the organization of a railroad. The large railroads lose the benefit of the experience that is gained on their line by depriving the motive power department of sufficiently well paid talent to record it; in many cases within my own knowledge large orders for engines have been given to builders by certain railroads without any reference at all to the opinion of the master mechanic, who may have numbers of engines already on the line designed and altered by him to suit the requirements of the road.

This is of course not always the case; there are some splendid examples to the contrary in America—railroads whose officers are proud to invite foreigners into their drawing offices, and who can show the gradual improvements that have been introduced. Such railroads in ordering new engines can avail themselves of the experiences of the past, and duplicate the engines that have been proven satisfactory.

But I am afraid this placing the master mechanic at the head of his department and giving him the means of worthily caring for the great interests in his charge, is not a universal custom.

Very often in showing me over their shops master mechanics have pointed out new engines of different designs to their own, and have remarked, "Those engines were ordered before I knew anything about it," or, "I couldn't get my designs carried out in engines we *bought*, as our directors gave the contract to the lowest bidder, and he could not afford to alter his plans for the price we paid."

I agree with Mr. Cushing that our builders are always glad to see master mechanics bring their drawings and to build to their designs if they are properly paid for such work; for among our locomotive builders are to be found some of the most courteous and enlightened business men in the country; but they are generally called upon to compete so closely for contracts that they can only afford to build engines to their own patterns.

H. P.

P. S. Since writing the above, I notice in your *Gazette* of this week an amusing little note from "A Much Abused Crosshead," which contains a capital suggestion, viz., "to use the best charcoal iron in making the crossheads." The breakages now so common might thus be avoided. In answer to the questions by "Crosshead" I would say, you are called "abominable," not only because you sometimes reak and smash a lot of valuable machinery costing twice as much as yourself, but also because you are much heavier than your wrought-iron or steel relation, and good mechanics try to reduce the weight of reciprocating parts. You may do your work "as well as a cast-iron wheel," but we don't compare you to such an article; for if you break we don't put a wheel in your place but a wrought-iron crosshead. We don't talk about "extravagant wrought-iron crossheads" because, though they cost twice as much as you do to make, they are much lighter to push backwards and forwards, and they never break; so they certainly will stand more work than you will.

You appeal to Mr. Editor as to your worth. A capital idea. I hope he may endeavor to state it for the benefit of all your admirers. Let him write to, say three different master mechanics in America and ask how many broken crossheads occurred on their roads during last year, and let him do the same to those English master mechanics who use wrought-iron crossheads, and then let us see how you stand.

If you are pronounced fit for anything but the scrap heap, I shall be the first to congratulate you and shall be thankful to have increased my stock of information, and I will abjure the use of strong terms in the future.

H. P.

Narrow (3-feet) Gauge Passenger Car.

This car "Eureka" built by Messrs. Billmeyer & Smalls, York, Pa., for the Eureka & Palisade Railroad Company, is 7 feet wide, 35 feet long, will comfortably seat 36 passengers, and weighs 18,000 lbs., or 500 lbs. per passenger. (By adding one foot in width of car the seating capacity is increased to 47 passengers, the weight about 19,000 lbs., or 405 lbs. per passenger.) This car is painted on the outside a canary color. The inside is of walnut, birdseye maple, ash and cherry beautifully finished, with silver plated hat and coat hooks, and contains a saloon. It is heated by Spear & Co.'s patent stove. The roof is covered with the best quality of tin instead of canvas. The sash and blinds lift up, instead of letting down, thus enabling the builders to increase the strength of the frame of car greatly over those with the sash and blinds sliding down, and avoiding the letting in of rain and dust.

The above style of car would weigh much less by using canvas as roof covering and reducing the frame work, but it is the design of these works to make thoroughly strong and safe cars, even at the expense of increasing weight somewhat. The "Eureka" is a car proportionately as strong in every respect as the standard Pennsylvania Railroad cars.

The many improvements that have been made on the broad-gauge, such as the Miller platform and coupler, the Westinghouse air brake, etc., can be readily applied with like advantages to narrow-gauge passenger cars.

RAILROAD GAZETTE

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CONTENTS.

ILLUSTRATIONS: Page
The Springfield Bridge.....163
Three-feet Gauge Passenger Car.....162
CONTRIBUTIONS:
The Springfield Bridge—A Reply to Mr. Philbrick.....161
Draughtsmen in American Railroad Shops.....163
The Renewals of Iron in the Waterbury Bridge.....166
EDITORIALS:
Apology and Argument.....164
Our Grain Exports.....164
Reports of Maintenance of Road Expenses.....165
Record of New Railroad Construction.....166
EDITORIAL NOTES.....166
GENERAL RAILROAD NEWS:
Railroad Earnings in March..165
Elections and Appointments.166
Personal.....166
Traffic and Earnings.....166
The Scrap Heap.....167
Old and New Roads.....167
Annual Reports.....169
MISCELLANEOUS:
Terminal Charges on Canal Grain at New York.....170
President Garrett on the Railroad War.....170

Editorial Announcements.

Addresses.—*Business letters should be addressed and drafts made payable to* THE RAILROAD GAZETTE. *Communications for the attention of the Editors should be addressed* EDITOR RAILROAD GAZETTE.

Contributions.—*Subscribers and others will materially assist us in making our news accurate and complete if they will send us early information of events which take place under their observation, such as changes in railroad officers, organizations and changes of companies, the letting, progress and completion of contracts for new works or important improvements of old ones, experiments in the construction of roads and machinery and in their management, particulars as to the business of railroads, and suggestions as to its improvement. Discussions of subjects pertaining to* ALL DEPARTMENTS *of railroad business by men practically acquainted with them are especially desired. Officers will oblige us by forwarding early copies of notices of meetings, elections, appointments, and especially annual reports, some notice of all of which will be published.*

Advertisements.—*We wish it distinctly understood that we will entertain no proposition to publish anything in this journal for pay,* EXCEPT IN THE ADVERTISING COLUMNS. *We give in our editorial columns* OUR OWN *opinions, and those only, and in our news columns present only such matter as we consider interesting and important to our readers. Those who wish to recommend their inventions, machinery, supplies, financial schemes, etc., to our readers can do so fully in our advertising columns, but it is useless to ask us to recommend them editorially, either for money or in consideration of advertising patronage.*

APOLOGY AND ARGUMENT.

Our attention has been called to the remarks appended to Mr. Croes' letter published in the *Railroad Gazette* of last week, which, it is charged, are wanting in courtesy to the writer of the letter and lacking in an acknowledgment of his frank denial or rather withdrawal of statements which were made "through information which at the time seemed to be conclusive." That the charge is a just one became painfully apparent on re-reading in print what was written in haste and was intended to refer to what we conceive to be the main question at issue, and of very great importance to the future welfare of the association whose action was discussed. No amount of zeal for the good of the Society, however, can be an excuse for neglecting to do justice or for a non-observance of the ordinary amenities which every participant in such a discussion has a right to expect from his opponent, and which we regret exceedingly were not as strictly observed as they should have been in the remarks referred to.

Aside from any personal consideration, there are, however, two questions at issue which concern nearly all associations having similar or kindred objects to those of the Society whose action has been the subject of criticism in the correspondence referred to. The one is that of the wisdom of collecting information on various subjects through the instrumentality of special committees appointed for the purpose, and the other whether such associations should endeavor to keep whatever knowledge may be submitted to them for the use of the members alone, or whether it should be diffused freely so as to be of the greatest benefit to the largest number possible.

The latter has been the policy advocated in these columns, and against which it is urged that such a course would detract from the dignity of such associations and from the honor and privileges of membership, and that it would convert the meetings into a sort of public caucus in which the most blatant would blow their horns loudest, and the words of the wise would be hushed by the general clamor. Now undoubtedly if the democratic principle should be established that every man be permitted to talk whether he has anything worth hearing to say or not, universal chaos would be liable to follow. But in advocating the free dispensation of the knowledge which such associations may collect, it by no means follows that people who have no knowledge should be heard. In the present age of talk no person should be allowed to speak on any occasion whatsoever, unless some good reason is apparent why he should be heard. A scientific association should act upon this principle. Life is too short and most of us are too busy to listen to people unless it is quite certain that they have something to say which is worth hearing. The election to membership in a scientific association should be a recognition by such association that the person elected is competent to talk or write, and that when he does so what he says will be worth listening to. The honor consists in the fact that an organized body of intelligent and skillful persons in the branch of knowledge represented by the association recognize and admit a person into their deliberations. Whatever conditions of membership or methods of admission are established are simply the defenses which the association has thrown up to protect itself from the ignorant and pretentious, just as railroad and other officials place an outpost at their office doors to exclude those whose talk would not be worth hearing. When a person is elected a member of Congress, or of any other similar body, it means that he is authorized to take part in the deliberations, and it would certainly seem like a novel doctrine to Americans if it should be argued that the position of Congressman was less honorable because the public are admitted to the galleries, or the proceedings published in the *Congressional Record*. It is also hard to see why the proceedings or the members should be any less dignified because they are either listened to, or an account of what is said and done is printed and read by as many as feel an interest in the topics considered. We are quite ready to admit that there will always be persons in such associations who will be disposed to talk and write for notoriety, just as Congressmen will speak to the galleries at times, but the evil is not a very serious one, and it is not difficult to punch a wind-bag in open debate, should such an operation be necessary.

The reason usually assigned for not making public all the proceedings of associations organized for the collection of information concerning any special profession is, that if it is thus freely dispensed, it will be no object to be a member, because then all the advantages of membership can be enjoyed without cost, and therefore there would be no object in paying the dues. Now there are some reasons which cannot be pronounced unsound and which it is almost useless to argue about, but which are so overshadowed by others that to consider the one at all in contemplation of the other seems the utmost folly. A man may sit near to a molehill and study it so closely that he may regard the one which is near as greater than the mountain which is farther off. Now, let us suppose that the argument stated has the force which is attributed to it; then it certainly is unwise to confine that information, which is so valuable, and which is all that induces persons to pay for membership in such associations, in such very leaky vessels. If the doctrine is sound, then it should influence the character of such associations to a much greater degree than it now does, and they should be converted with secret organizations, and members should be bound in some way, as they were in similar associations in olden times, not to reveal the "trade secrets." If the proceedings are copyrighted for the purpose of confining the knowledge to the members of such association alone, then the copyright should be strictly enforced, and no publication permitted excepting such as the association may authorize, and as copyrights—very much to the disgrace of Americans—do not extend across the Atlantic, measures should be taken to prevent the publication of the proceedings already as far as that is possible by withholding copies from such publications as are thus guilty of publishing "trade secrets" and then circulating them here. If a secret policy is to be adopted, carry it to its ultimate results, and if possible thus realize all the advantages which accrue from such a system. The proceedings of a society cannot be made half secret and half public; they must be the one or the other.

The reasons for making the proceedings of such associations public involve some much larger considerations than any which are urged against such a policy. In the first place the difficulties in the way of making anything generally known are very much greater than is generally supposed. An association may be organized and its existence known in a very general way, but it requires some special and continuous means of communicating the fact to make the persons interested in the objects of its organization know anything of its nature and the work which it is doing. It is very much like the occurrence which it is said Thackeray delighted to tell of, and which took place while he was in this country and staying at one of our hotels, where he overheard the following conversation between two waiters: "Jim, do you know who that is?" (referring to Thackeray). Jim answered "no." "Why, he," said the interlocutor, "is the great Thackeray." "What's he done," said Jim. "Damned if I know," was the reply. It is very much the same way with scientific and engineering associations. Ask half-a-dozen men in the occupation represented by an association what its objects are or "what it's done," and five out of the six will give the same answer as the waiter did about Thackeray. The time of almost all people who are capable of doing good work is so much occupied that in order to get them to apprehend the work which an association is doing it must constantly be presented to their notice in a variety of ways. If a person engaged in any branch of engineering sees a report of a paper or of a discussion of a subject in which he is specially concerned, he at once becomes interested in the proceedings of the association; but tell him that the archives of such an association contain great professional treasures for him, and the impression produced is very vague and indefinite. If the proceedings are published as extensively as possible, they thus become universal solicitants of members, and by making the work of the association known increase its influence and usefulness. The membership which is thus gained is tenfold greater than that which is lost, because persons can get the proceedings without paying for them. The history of all associations which have adopted the policy of publicity sustains this view.

Another objection urged against allowing the proceedings of scientific associations to be published is, that they are liable to be very incorrectly and inaccurately reported. This undoubtedly is a disadvantage, but if we are obliged to forego accuracy or publicity it would, we believe, be very much better to sacrifice the first instead of the last. We are placed in a position in which we must select one of two things, and therefore must choose the most valuable of the two. It is of course true that the proceedings of a scientific association should be published correctly, and there should therefore undoubtedly be an edition authorized by the society; but to do this involves care and time, and it must be remembered that people will not hold their attention in suspense while the authorized publication is in preparation, but will usually in the most prompt and determined manner allow the whole matter to pass out of their minds, and the great majority of them cannot be induced to take it up again. If, however, a report of the proceedings of an association is published immediately after they have occurred, when it has all the freshness which current events have, it will be read by ten times the number of persons and will attract very much more attention than if the publication is delayed for months after the meeting was held. We are very apt to forget that the amount of available time and attention which a person has to give is a very limited quantity, and must be encouraged as much as possible; and average people have as much objection to giving up their attention to a subject and then resuming it again as they have to changing cars during a railroad journey.

We therefore believe that the advantages gained by giving the utmost publicity to the proceedings of scientific associations outweigh immensely those supposed to result from the reverse policy, and that the idea of converting an association for the advancement of scientific knowledge into a sort of secret ring or a trades union, and the placing of obstacles in the way of the freest publication of their proceedings, is, to speak mildly, a very great mistake.

OUR GRAIN EXPORTS.

The course of the grain traffic during the current year has a deeper significance than has been accorded to it, for it has measured with unusual clearness the ability of this country to compete in supplying the European demand. Always, of course, our grain-growers have to compete with Europe itself—with Western Europe, we mean, which is a great grain-producing country. We are too much accustomed to assume that there must always be a large demand to supply from abroad in all the manufacturing countries of Europe; but the fact is that Great Britain is the only considerable country which is wholly unable under any circumstances to supply itself. France imports in a bad year, but it has a considerable surplus to export in a good year, and whatever deficiences there may be in Germany and Austria are generally so much more than supplied by the surplus of Hungary that that country competes for the supply of Great Britain. Russia is well known as an exporter of grain; but it is too often supposed that the other European countries depend chiefly on Russia and the United States for their bread. It is true that most of their imports of breadstuffs come from these countries, but the greater part of their bread is raised at home.

On this account the European demand on the bread-exporting communities is very fluctuating. If Europe with an average crop got half its wheat from abroad, then nothing but the almost impossible good fortune of a crop double the average would render it self-supplying; but if its average crop is equal to four-fifths of its supply, then an increase of one-quarter will render it self-supplying, and a crop one-eighth larger than the average would decrease the demand on foreign countries one-half. Even in Great Britain, which is least able to supply itself, the imports are twice as great for some years as for others, and, as we have said, France sometimes exports more than it imports, though it usually imports much more than it exports.

The great changes in the sources of wheat supply of late years have been, first, the development of an important and wholly new source in California, which now may export one-fourth of the supply of Great Britain; the widening of the producing area in the upper Mississippi valley, which however has been going on rapidly and without interruption for thirty years; and, third, the development o

a vast field for production in Southern Russia. This last on some accounts seems most likely to affect the demand on our "Northwest," as we still call the upper Mississippi valley, now east of the center of the northern part of the country. It has the immense advantage of comparative nearness to the consumers; it is productive and of immense extent; and the recent extension of railroads making most parts of it easily accessible either from the Black Sea or the Baltic at last opens the country to the European markets. This last step was indispensable to the development of grain culture for export in Southern Russia, and it has not yet had its full effect for many of these roads have been but recently opened, and some are not yet completed. Still, Russia has been our chief competitor for some years, and its facilities have been greatly increased for some years past, so that it should already be showing us how far it can compete with us for supplying the demand from Western Europe.

Now last year presented a coincidence of circumstances likely to test to the uttermost our power to supply Europe; for the competition was made the sharpest possible by a production in excess of the demand. Almost every European country had an exceptionally large crop, importers and exporters alike, with the exception of Russia, perhaps, where the crop was not bad. We also had an unusually large crop, and it seemed probable that we would be asked for very little of it. Under the circumstances the price of wheat fell about one-third. Let us see now to what extent we have been driven from the market by this competition, and how far the exceptionally large European crop has decreased our exports:

The exports of flour and grain from this country to Europe, from September 1 to April 13 from New York, April 7 from New Orleans, and April 10 from other ports (including San Francisco) were:

	1874-75.	1873-74.	Decrease.	P. c
Flour, bbls	642,452	1,027,608	345,156	34.5
Wheat, bush	31,043,248	36,010,981	2,967,732	8.2
Corn, bush	11,182,644	14,296,702	3,184,058	22.1
Total (bushels)	47,246,926	54 931,918	7.684,992	14.0
	1874-75.	1872-73.	Increase.	
Total exports	47,246,926	36,788,576	10,458,350	28.4
	1874-75.	1871-72.		
Total exports	47,246,926	28,983,037	18,263,889	63.0

It is thus evident that the unfavorable showing of a large decrease in the bulk of our grain exports, reaching 14 per cent. for this crop year, is due, not to an exceptional inactivity or even an exceptional falling-off of the foreign demand, but wholly to the exceptionally heavy exports of the last crop year, with which we compare. We are not exporting so much as last year by a seventh, it is true, but we have exported 28 per cent. more than in 1872-73, and 63 per cent. more than in 1871-72. The current exports are, indeed, extraordinarily large, and but for the great fall in prices our grain growers as a body would be unusually prosperous. But the average price received for wheat and flour has probably been nearly one-third less than last year, and the consequent decrease in the receipts from these exports has been about 40 per cent. The receipts for the corn exports have been something like 17 per cent. more, owing to an increase of about one-half in the price of that staple; but the amount of exports of this grain is so small comparatively than the gain in corn can hardly equal 6 per cent. of the loss on flour and wheat. Estimating the values very roughly, we may say that last year the flour and wheat exports from September 1 to April 10 were worth $80,000,000; this year but $48,000,000. On the other hand the corn exports were worth last year $11,200,000 and $13,000,000 this year. The decrease in total value is thus very great compared with 1873-74. But if we compare with previous years, no such decrease is apparent. Not only were our exports extraordinarily large last year, but the price was extraordinarily high, and this year's price is only about one-quarter lower than that of the three preceding years. Taking flour and grain by themselves, the exports for the period under consideration were about 21,300,000 bushels in 1872-73 and 15,500,000 in 1871-72, against 36,300,000 this year, and though the price is lower this year by a quarter, the total receipts from these exports must be about 17 per cent. more than in 1872-73 and 56 per cent. more than 1871-72.

Thus it is evident that we have this year competed successfully with Europe itself for the supply of its consumers. In the face of its enormous crop we have sold it much more than usual, though much less than last year. We have been able to underbid the European producers on their own ground and secure the market for our American wheat. Large as is the surplus of wheat on hand here in farmers' hands, there must be a larger proportional surplus in Europe.

This of course does not prove that we can continue to produce under such circumstances, for our wheat crops may not have been profitable. Moreover, as we have said we have not yet felt the full effect of Russian competition. Not only is a large part of its wheat country but recently connected with the sea through the new railroads, but it is a country where development is not so rapid as in the Northwest and California, and we may find in four or five years a much sharper competition from that country. Indeed, it is not impossible that California and Russia within a comparatively short period may be fully able to supply any ordinary European demand. They have no markets elsewhere of any extent, and their surplus must go to Europe.

What then is to be the fate of the upper Mississippi valley? Shall we hastily conclude that it will no longer have a market for breadstuffs and must confine itself to other products? Not unless we greatly exaggerate the importance of our foreign exports of breadstuffs. As we have often said, the chief market for United States produce is in the United States. In 1872 the total production of wheat in the United States was reported at 250,000,000 bushels. During the same year the exports of wheat and flour were but about 20,000,000, or but 8 per cent. of the whole. The rest was consumed in the country. Now this growth of home consumption is likely to be greater than any possible growth or any probable decline in the foreign demand, simply because this country grows faster than Europe, and, as is not sufficiently considered, *the growth of the country is chiefly in the towns*, and among people who consume and do not produce agricultural products. The tendency in this direction is well marked and in most States very strong. No new State is now increasing its agricultural population very rapidly. The Western States grow and grow very fast, but the chief growth is in the towns. The farmers in the near future may send less to foreign consumers, but the consumers are coming to them. The whole increase of population of the more Eastern States, say that part of the country east of a line drawn from Cleveland to Baltimore, must get its supplies from the West, for the East does not increase its production. The grain-carrying railroads, then, are not threatened with a decrease of traffic consequent on a possible falling off of the foreign demand. They may in time carry less to the sea to be exported—hardly a profitable traffic on the average - but they will carry, as they do now chiefly, from Western farms to the consumers in towns and cities East and West.

RAILROAD EARNINGS IN MARCH.

Name of Road.	Mileage. 1875.	1874.	Inc.	Dec.	Per c.	Earnings. 1875.	1874.	Increase.	Decrease.	Per c.	Earnings per Mile. 1875.	1874.
Central Pacific	1,293	1,260	33	...	2⅝	$1,192,000	$882,423	$309,577	.. ..	35⅛	$922	$700
Chicago, Rock Island & Pacific	674	674	.....	.....	....	649.870	541,340	108,530	.....	20	964	803
Denver & Rio Grande	120	72	.....	.....	.....	26 634	24,257	2.377	.....	9¾	222	202
Illinois Central	1,1 9	1,109	.....	.....	.....	586,188	561,798	24,395	.....	4⅓	529	507
Indianapolis, Cincinnati & Lafayette	179	179	...	.....	.....	135,154	145.747	.....	$10,593	7⅓	755	814
International & Great Northern	458	407	51	.....	12⅓	104,661	85,000	19,661	.....	23⅛	229	209
Kansas Pacific	761	761	.....	.....	.....	242,033	245,774	.....	3,741	1⅓	318	323
Missouri, Kansas & Texas	786	786	.....	.....	.....	240,000	262,801	.....	22,801	8⅔	305	334
Ohio & Mississippi	393	393	.....	.....	.....	310,903	304,528	9,375	.....	2⅓	791	775
St. Louis, Alton & Terre H.	266	266	.....	.....	.....	83,023	104,193	.....	21,170	20¼	312	392
" " " Branches	71	71	.....	.....	...	49,370	44,472	4,898	.. ..	11	695	626
St. Louis, Iron Mountain & Southern	685	685	.....	.....	...	275,300	236,132	39.168	.....	16⅔	402	345
Toledo, Peoria & Warsaw	227	237	.....	10	4¼	72.805	98,023	.....	25,218	25⅔	321	414
Union Pacific	1,032	1,032	.....	.....	...	823,510	651,475	172,135	....	26⅓	798	631
Totals	8,054	7,980	84	10	.....	$4,791,451	$4,187,938	$687,016	$83,523	..	$595	$535
Total increase	.....	.....	74	.....	0⅞	.....	.....	603,493	.....	17¾	.....	.....

RAILROAD EARNINGS, THREE MONTHS ENDING MARCH 31.

Name of Road.	Mileage. 1875.	1874.	In.	Dec	Per c.	Earnings. 1875.	1874.	Increase.	Decrease.	Per c.	Earnings per mile. 1875.	1874.	Inc.	Dec	Per c.
Central Pacific	1,293	1,260	33	....	2⅝	$2,984,000	$2,535,025	$448,975	.....	17⅞	$2,308	$2,012	$296	....	9⅞
Denver & Rio Grande	120	120	....	....	.....	71,10a	63,689	7,415	.....	11⅝	593	531	62	....	11⅝
Illinois Central	1,109	1,109	....	....	.....	1,595,880	1,663,454	.....	$67,584	4⅛	1,439	1,500	....	$61	4⅛
Indianapolis, Cin. & Lafayette	179	179	....	....	.....	380,518	415,691	.....	35,173	8⅓	2,126	2,322	....	196	8⅓
International & Great Northern	458	399	59	....	14⅞	339,736	324,171	15,565	.....	4⅞	742	812	....	70	8⅔
Kansas Pacific	761	761	....	..	.....	593.265	594,552	.....	1,287	0¼	779	781	....	2	0¼
Missouri, Kansas & Texas	786	786	....	....	.....	661,000	759,505	.....	98,505	13	838	966	....	128	13
Ohio & Mississippi	393	393	....	....	.....	803.777	813.734	.....	9,957	1⅓	2,045	2,071	..	26	1⅓
St. Louis, Alt. & T. H.	266	266	....	....	.....	234,763	287,424	.....	52,661	18⅓	881	1,081	....	200	18⅓
" " " Branches	71	71	....	....	.....	162,294	120,576	41,718	.....	34⅔	2,286	1,698	588	....	34⅔
St. Louis, Iron Mountain & So.	685	679	6	..	0⅞	826 895	703,574	123,321	....	17⅓	1,207	1.036	171	....	16⅓
Toledo, Peoria & Warsaw	227	237	..	10	4¼	206,451	277,171	.....	71,120	25⅔	908	1,170	...	262	22⅔
Union Pacific	1,032	1,032	..	....	.....	2,018,746	1,880,184	138,566	... .	7⅓	1,956	1,822	134	....	7⅓
Totals	7,380	7,292	98	10	.....	10,878,029	10,438,756	$775 560	$336,287	.....	$1,474	$1,432	$42	....	2⅞
Total increase	.....	.....	88	....	1⅓	... .	.....	439,273	.....	4⅓	.....	...	....	....	.....

Reports of Maintenance of Road Expenses.

We have received the "Abstracts of Section Returns," showing expenditures for maintenance of way for the four months ending with March for the Eastern Railroad, and for the three months ending with the same month for the Maine Central. These abstracts give simply the number of days' work and the total expenditure on each of the sections of each division, there being columns for the numbers of sections, the number of days and the amount expended, and at the close a summary giving the days and amounts, and also the average cost per section and the average cost per mile for the work on each section on the whole road. The whole abstract for a month covers a sheet little larger than a half-sheet of foolscap. Of course these data do not enable one to judge of the traffic which each section and division has had to bear.

The following is a statement of the summaries for the whole road for each month:

EASTERN RAILROAD.

	Days.	Amount.	Average cost per section.	Average cost per mile.
December	6,035	$9.962 93	$138 23	$35 36
January	5,799½	9 560 34	132 78	33 59
February	5,606½	9,295 62	129 19	32 66
March	6,120¾	9,751 05	135 43	34 26

MAINE CENTRAL.

	Days.	Amount.	Average cost per section.	Average cost per mile.
January, 1875	4,937	$8,144 10	$119 77	$22 94
" 1874	5,768½	9.477 33	139 57	26 70
February, 1875	4,949	8.035 25	118 17	22 63
" 1874	5,363¼	8,706 66	128 27	24 52
March, 1875	5,685¼	9,215 86	135 53	25 96
" 1874	6,001¾	9,755 45	143 46	27 48

Here the last column will serve as a basis of comparison with other roads, but of course without a knowledge of the traffic the comparison would not be very instructive.

Mr. Charles Latimer, Chief Engineer of the Atlantic & Great Western Railroad, a specimen of whose monthly maintenance of way reports we published a few weeks ago, has sent us the report for February, which is in a somewhat improved form. Comparing the former, copied on page 122 of the current volume of the *Railroad Gazette*, we find first a line running along the left side of the table, perpendicular to the lines, which reads, "To get material account for any division, subtract column of 'used for five months' from column of 'cost of supplies and stock for five months.'" The column headed "Gross tonnage" in the old has the title, "Basis of tonnage" in the new form, with this specification: "Locomotives, 50 tons; coaches 20 tons; baggage cars, 18 tons. Loaded freight cars, 18⅓ tons; empty freight cars, 8⅓ tons. Cabooses, 8 tons." Under the general head of "Supplies," two columns are added, preceding that for cost per mile per month in question. The first of these is headed: "Cost of supplies used from stock and purchased, month of February, 1875;" and the second, "Cost of supplies *used* for five months ending February 28, 1875," while the old column, "Total cost for supplies for five months," is omitted; and after the column for "Cost per mile," a third column is added, giving "Stock carried forward from previous year, and total cost of supplies for five months ending February 28, 1875." In this latter there are two entries for one in the others, "S," prefixed to one and "P" to the other. A line along the right-hand margin of the table informs us that in this column "S" is balance of stock carried from previous year, and "P" represents purchases for the five months.

It requires a little study at first to become familiar with the readings in Mr. Latimer's table, but when familiar with it, the reader can find a great deal of information in it, and it becomes very significant. Comparing the February with the January report, for instance, we find the differences in the gross tonnage over each division—about 3⅓ per cent. less on the First Division; 7 per cent. more from Meadville to Shenango, 1¾ per cent. less from Shenango to Burghill, the same decrease from Burghill to Leavittsburg, 17 per cent. more from Leavittsburg to Kent, all on the Second Division; 11 per cent. decrease on the Third Division, etc. The expenses per mile for January and February and the five months of the fiscal year ending with February were:

	Labor.	Supplies.	Total.
January	$41 01	$26 39	$69 40
February	37 38	31 17	68 55
Five months	246 65	278 95	520 60

The pay rolls show 683 men employed on the road, which has 673⅓ miles of track, including that in sidings, and the gross amount paid was $25,172.77 in February, 1875, against $32,871.22 for the same month of 1874. There was a decrease of $25,900 in the cost of supplies for this month.

There seems to be a quite general effort—an effort more general than usual at least—on the part of railroad officers to reduce expenses to the lowest point, and as an aid to keep accurate accounts of expenses; and the road department, one of the costliest on a railroad, offers great opportunities for waste of materials and misapplied labor, and, as accounts are commonly kept, it is difficult to determine where the waste occurs. It

is encouraging to see an effort made to keep the department more fully under observation and control.

Record of New Railroad Construction.

This number of the *Railroad Gazette* has information of the laying of track on new railroads as follows:

Little Rock & Fort Smith.—Extended westward 12 miles to a point 20 miles above Clarkville, Ark.

This makes a total of 195 miles of new railroad completed in the United States in 1875, against 324 miles reported for the same time in 1874, and 566 in 1873.

MARCH RAILROAD EARNINGS are reported by fourteen companies, an important one, the Chicago, Rock Island & Pacific, being added to the list. The roads reporting show a large average increase in earnings per mile of nearly 12 per cent. Nine of the companies report an increase, and in four cases this increase is 20 per cent. or more, reaching 35 per cent. on the Central Pacific. The average earnings per mile are light, however.

For the three months, thirteen roads report, and the list is the same as for the two previous months, except that the Burlington, Cedar Rapids & Minnesota has fallen out. The showing is a considerable improvement of that of the previous periods, the decrease of 3 per cent. in earnings per mile for the first two months being changed into an increase of 2⅞ per cent. Nearly half of March many roads were very badly obstructed by snow, and their traffic and earnings thus reduced. Seven of the thirteen roads reporting for the first quarter of the year still show a decrease, however, varying from ¼ to 25 per cent. The mileage reporting is about one-tenth of that worked in the United States.

The Renewals of Iron in the Waterbury Bridge.

TO THE EDITOR OF THE RAILROAD GAZETTE:

The controversy which has found expression in your columns concerning the Springfield bridge seems to have developed a considerable amount of misstatement of facts, arising of course from want of reliable information, and a wonderful facility for seeing some things and not seeing others when printed in the columns of the same publication. I do not propose at this time to discuss the relative merits of the different systems of iron bridge building, but wish to correct one statement of Mr. Philbrick's, which statement is an injury to the Central Vermont Railroad, unjust and without warrant. If Mr. Philbrick will take a little care to ascertain what parts of the Waterbury bridge were replaced with new iron and the quality, he will hardly risk his professional reputation, partial as he is to lattice bridges, by repeating this assertion: "The rupture of an eye-bar threw the Waterbury bridge into the river without warning, and may do so again; for although new bars were supplied in the bottom chords, the old ones still remain in the tensile members of the web, subject to the same suspicions as those which were removed and the one that broke."

To save the gentleman all trouble in hunting up the facts, with which, however, I had supposed him previously acquainted, and that he may never repeat this statement without authority, I will state that in accordance with the decision I made on the day of the fall of the bridge, all members which received tensile strains from any amount or position of the load were replaced with new iron, not only in the span which fell, but in the other spans which stood the traffic of the road for several months. E. H. HEWINS, C. E.

BOSTON, April 17, 1875.

General Railroad News.

ELECTIONS AND APPOINTMENTS.

Schoharie Valley.—The following directors have been chosen for the ensuing year: Jacob Vroman, Charles Vroman, Lucien Vroman, Daniel B. Vroman, James Netbaway, Julius Rowley, Peter L. Bouck.

Canada Southern.—Mr. James Bryce has been appointed General Western Passenger Agent, with office in Chicago.

Hannibal & St. Joseph.—The following circular has been issued:

"At a meeting of the executive committee of the board of directors of this company, held in New York, Mr. H. H. Courtright was appointed General Superintendent, vice Mr. L. W. Towne, resigned. Mr. Courtright will still retain the position of General Freight Agent."

Poughkeepsie Bridge Company.—Mr. John F. Winslow has been chosen a director. George Innis has been chosen Treasurer and George R. Gaylord Secretary, in place of G. F. McCandless and C. B. Thurston.

Burlington & Lamoille.—At a special meeting of the board in Burlington, Vt., April 7, Mr. William B. Hatch, of New York, was elected President, in place of Hon. D. C. Linsley, resigned; Hon. Nathaniel Parker, of Burlington, was elected Vice-President, and William Hale, of Essex Junction, Chief Engineer.

Iowa Railroad Contracting Company.—At the annual meeting in Centerville, Ia., April 6, the following directors were chosen: B. F. Smith, Andrew Carnegie, Thomas A. Scott, A. B. Stone, S. R. Stone, C. A. Secor, D. W. Kilbourne, A. W. Spies and George Opdyke. B. F. Smith will probably be elected President.

Peoples' Freight Railway.—The following is published as a list of the officers of this company: President, Wm. B. Burr, Philadelphia, Pa.; Secretary, Samuel B. Coughlin, Philadelphia; Treasurer, Edwin A. Ford, Bordentown N. J.; Chief Engineer, N. McConaughy; Directors, A. S. Cadwallader, George Justice, Yardleyville, Pa.; Joseph Bailey, Baileysburg, Pa.; H. Billingfelt, Adamstown, Pa.; Jonathan Zerbe, Shafferstown, Pa.; Joseph S. Burr, Wm. B. Burr, George Coughlin, H. C. Wright, Philadelphia; S. R. Toy, Camden, N. J.; W. C. Flagg, Moro, Ill.; W. W. Corbett, Chicago.

South Carolina.—At the annual meeting in Charleston, S. C., April 14, the old board of directors was re-elected, as follows: Wm. J. Magrath, Geo. A. Trenholm, L. D. de Saussure, John Hanckel, Andrew Simonds, George W. Williams, Henry Gourdin, Francis J. Pelzer, Daniel Tyler, Wm. A. Courtenay, James S. Gibbes, Richard Lathers, Samuel Sloan, Moses Taylor, J. P. Southern.

Columbus & Hocking Valley.—At the annual meeting in Columbus, O., April 13, the following directors were chosen: M. M. Greene, Wm. G. Deshler, Henry C. Noble, W. B. Brooks, Isaac Eberly, C. P. L. Butler, John L. Gill, John D. Martin, C. H. Rippey, S. W. Pickering, P. W. Huntington, H. W. Jaeger, B. S. Brown. The last three are new directors, replacing B. E. Smith, John Greenleaf and Theodore Comstock. The board elected M. M. Greene President and J. J. Janney Secretary and Treasurer.

Columbus & Toledo.—At the annual meeting in Columbus, O., April 13, the following directors were chosen: M. M. Greene, B. E. Smith, Wm. G. Deshler, H. C. Noble, D. S. Gray, John Greenleaf, P. W. Huntington, S. M. Young, A. L. Backus, H. S. Walbridge, John D. Van Diemen, M. M. Cary, A. H. King. The board elected M. M. Greene President and James A. Wilcox Secretary and Treasurer.

Chicago & Lake Huron.—Mr. James McRae has been appointed Superintendent of the Western Division. He has been General Agent for the Eastern Division.

Mississippi Valley & Western.—Mr. H. B. Meeker has been appointed General Freight and Ticket Agent, vice C. H. Spencer.

Missouri Railroad Commission.—The Governor of Missouri has appointed John S. Marmaduke and Mortimer McIlhaney Railroad Commissioners in place of two of the original appointees, who declined. The board was to meet in Jefferson City this week, to organize.

Shenandoah Valley.—At the annual meeting in Front Royal, Va., there was a sharp controversy over the organization, and the proxies representing the stock of Jefferson and Page counties, with some of the private stockholders, withdrew and organized another meeting and chose the following directors: Bushrod C. Washington, C. T. Butler, T. C. Green, Jefferson County, W. Va.; Peter B. Borst, H. J. Smoot, A. Broadus, Page County, Va.; Wm. D. Smith, E. W. McDonald, Clarke County, Va.; M. T. Bristoe, Warren County, Va.; J. W. F. Allemong, Rockingham County, Va.; Geo. H. Bardwell, Philadelphia.

Long Island.—At the annual meeting in Hunter's Point, N. Y., April 13, the following directors were chosen: Chas. Cambles, Peter Cooper, B. L. Cutting, Wm. Dowd, Abram S. Hewitt, Henry Havemeyer, J. C. Havemeyer, G. W. Lane, W. H. Macy, Lawrence Waterbury, Wm. Kevan, J. E. Parsons, F. W. Whittemore, all of New York City. The board elected Henry Havemeyer, President in place of Oliver Charlick. Messrs. Cambles, Cooper, Cutting, Dowd, Hewitt, Lane, Macy, Kevans, Whitmore and Parsons are new directors, there being a complete revolution in the management.

Central Vermont.—Mr. W. L. Short has been appointed Master Mechanic of the Rutland Division with office in Rutland, Vt., in place of Mr. N. L. Davis, resigned.

St. Paul & Pacific.—The bondholders have designated Thomas Denny, Thomas W. Pearsall and Jacob S. Wetmore as Trustees under the first mortgage of the Main Line, in place of Horace Thompson, George L. Becker and W. G. Moorhead, resigned.

Northern Pacific.—The United States District Court for New York has appointed Gen. George W. Cass, President of the company, Receiver.

Gulf, Western Texas & Pacific.—At the annual meeting, April 5, the following directors were chosen: Charles A. Whitney, Fletcher S. Stockdale, Henry Sheppard, Robert Clark, A. C. Hutchinson, Richard J. Evans, D. C. Proctor, John C. French, M. D. Monserrate. The officers chosen were as follows: Richard J. Evans, President, Superintendent and Chief Engineer; Fletcher S. Stockdale, Vice-President and Attorney; M. D. Monserrate, Secretary, Treasurer and General Freight and Passenger Agent.

Logansport, Crawfordsville & Southwestern.—Mr. Joseph Haas has been appointed General Freight Agent.

Atchison & Nebraska.—It is stated that Mr. L. W. Towne, late of the Hannibal & St. Joseph, has accepted the position of General Superintendent of this road.

Texas, Mississippi River & Northwestern.—Mr. J. E. Redfield has been appointed Receiver by the United States Circuit Court.

Maine Central.—W. T. Berry has been appointed General Freight Agent. The office of Purchasing Agent is abolished.

Lake Shore & Michigan Southern.—Mr. John M. Sanborn is appointed Master Mechanic of the Toledo Division, *vice* Mr. Albert Congdon, resigned. Office and shops at Norwalk, Ohio.

Great Western of Canada.—The South Wales *Telegram* says that Mr. F. Broughton, for several years Manager of the Mid Wales Railway, has accepted the position of General Manager of the Great Western of Canada. He accompanied the new chairman, the Hon. Mr. Childers, to Canada on his recent visit, and is reported a most able railroad manager.

PERSONAL.

—Mr. N. L. Davis has resigned his position as Master Mechanic of the Rutland Railroad and is about to go into business on his own account at Portland, Me. Mr. Davis came to the Rutland road as a locomotive engineer in 1849, was made foreman of the Rutland shops in 1858, and became Master Mechanic in 1864 on the death of Mr. H. G. Litchfield.

—Mr. John W. Davis, for some time past General Agent of the Baltimore & Ohio Railroad, has resigned and will accept a position connected with the Northern Central Company.

—Hon. Nathan B. Palmer, formerly Canal Commissioner and at one time State Treasurer of Indiana and for several years President of the old Madison Railroad Company, died at his residence in Indianapolis, April 13, at the age of 85 years.

—Mr. George L. Cook has resigned his position as Assistant Superintendent of the Brunswick & Albany Railroad, to take effect June 1.

TRAFFIC AND EARNINGS.

Flour and Grain Movement.

We report this week only for the week ending April 10, flour in barrels and grain in bushels:

Flour:	1875.	1874.	Inc. or Dec.	P. c.
Lake ports' receipts.....	82,460	115,483	Dec.. 33,023	28.6
Lake ports' shipments...	98,652	108,367	" 9,715	9.0
Atlantic ports' receipts..	180,809	198,182	" 17,373	8.8
Wheat:				
Lake ports' receipts.....	423,179	953,351	" 530,172	55.5
Lake ports' shipments...	503,839	748,591	" 244,752	32.6
Atlantic ports' receipts..	623,100	428,015	Inc.. 195,085	45.6
Corn:				
Lake ports' receipts.....	377,447	964,927	" 587,480	60.8
Lake ports' shipments...	396,703	513,741	" 117,038	22.8
Atlantic ports' receipts..	766,256	1,369,627	" 603,371	44.0
Grain of all kinds:				
Lake ports' receipts.....1,109,503		2,623,377	" 1,513,874	57.7
Lake ports' shipments...1,132,815		1,526,790	" 393,975	25.8
Atlantic ports' receipts..1,694,681		2,279,409	" 584,758	25.6

Here the only increase is in wheat receipts at Atlantic ports, which are larger than either receipts or shipments in the Northwest and much larger than last year, though Northwestern receipts and shipments are much smaller. It will be noticed that in spite of the low rates of transportation the shipments from Northwestern ports are more than a quarter less than last year; but the increase of Atlantic receipts indicates that larger shipments than usual are being made direct from interior points to the seaboard, which is so much taken from the lake and river ports' business. Baltimore ranks first in corn receipts, and third in flour and wheat. Of the whole receipts on the Atlantic, Baltimore got one-sixth of the flour and a little more than 17 per cent. of the grain of all kinds, New York getting more than one-third of the flour and 27.7 of the grain.

The progress of the Northwestern grain movement is seen by the following statement of the eastern shipments for the four weeks ending with the dates named:

	April 10.	April 3.	March 27.	March 20.
Flour, bbls.....	98 652	110,275	88.368	85.814
Grain, bush.....	1,132,815	1,054,587	1,067.241	1,118,790

This shows comparatively little variation in the amount of shipments. The chief noticeable feature recently has been a great decrease of corn shipments and an increase in wheat shipments. Until recently, corn shipments were the only ones which compared well with last year's business; but now corn and wheat seem to have changed places. Probably the exceptionally large hog crop marketed has so far exhausted the exceptionally small corn crop of last year that there will not be much movement in this staple hereafter.

San Francisco wheat and flour shipments for March were as follows:

	1875.	1874.	Inc. or Dec.	P. c.
Wheat, bushels.....	1,384,500	403,000	Inc..981.500	243.5
Flour, barrels.....	33,400	31,700	Inc.. 1.700	5 4
Total (flour red. to wheat).	1,534,800	545,650	Inc..989,150	181.5

A notable incident in the month's shipments was the export of 3,535 barrels of flour to Siberia. All or nearly all the wheat went to Great Britain, but only about 60 per cent. of the flour. Of the remaining 40 per cent. in March one-half went to Central America, one-fourth to Siberia, the rest to South America, China, Japan and the Pacific islands. China shipments in March were unusually light. For the nine months of the crop year ending March 31 exports were as follows, flour in the total being reduced to wheat at the rate of 4½ bushels to the barrel:

	1874-75.	1873-74.	Inc. or Dec.	P.c.
Wheat, bushels.....	13,399.667	10.894,000	Inc..2,505.667	23.0
Flour, barrels	377,500	490,400	Dec.. 112,900	23.0
Total, centals ..	15,098,417	13,100,800	Inc..1,997,617	15.3

Coal Movement.

Week ending April 10:

	1875.	1874.	Inc. or Dec.	P. c.
Anthracite.....	224,121	446,444	Dec..222,323	49¾
Semi-bituminous, Broad Top and Clearfield	30,039	.....	.....	....
Cumberland.....	43 147	.....	.....	....
Bituminous, Barclay.....	3 6:8	.....	.....	....
Bituminous, Western Pa....	1 ,644	.....	.....	....
Bituminous, West Va.....	4,960	.....	.....	....

St. Louis coal receipts for the three months ending March 31 were as follows:

	Tons.
Belleville & Southern Illinois..	97,868
St. Louis & Southeastern.....	50 362
Vandalia Line.....	47,937
Illinois & St. Louis.....	47,116
Ohio & Mississippi	40,887
Indianapolis & St. Louis.....	4.620
Cairo & St. Louis..	4,298
Chicago & Alton	714
Toledo, Wabash & Western	351
River.....	7,679
Total.....	301,844
Total, 1874.....	171,448
Increase (76 per cent.).....	130,396

Railroad Earnings.

Earnings have been reported by the following companies:

Year 1874:	1847.	1873.	Inc. or Dec.	P.c.
Walkill Valley.....	$69,139	.....	.....	....
Year ending February 28:	1874-75.	1873-74.		
Northeastern.....	$416,956	403,851	Inc.. $13,105	3¼
Expenses.....	241,514	258,635	Dec.. 17,121	6⅝
Net earnings.....	$175.442	$145,216	Inc.. $30,226	20¾
Per cent. of expenses.....	57.93	64.04	Dec.. 6.11	9½
Year ending March 31:				
Gulf, Western, Tex. & Pac..	$164 454	$242,301	Dec.. $77.847	32½
Expenses.....	114,292	149,788	Dec.. 35 496	23¾
Net earnings.....	$50,162	$92,513	Dec.. $42,351	45¾
Per cent. of expenses.....	69.50	61.82	Inc.. 7.68	12¾
May 1 *to December* 31:	1874.			
Lake Sup rior & Miss.....	$485,192	.....	.....	....
Month of February:	1875.	1874.		
Denver & Rio Grande.....	$23,660	$19,124	Inc.. $4,536	23¾
Expenses.....	13,279	12,090	Inc.. 1,189	9⅞
Net earnings.....	$10,381	$7,034	Inc . $3,347	47¾
Per cent of expenses	56.55	63.22	Dec.. 6.67	10⅝
Month of March:				
Lou sville, Cin. & Lexington.	$110,806	.....	.....	....
Expenses.....	101,014	.....	.....	....
Net earnings.....	$9,792	.....	.....	....
Per cent. of expenses.....	91.16	.....	.....	....
Union Pacific, two weeks in April.....	$541,653	$343,913	Inc..$200,740	58¾
Great Western, two weeks ending April 2.....	£41,299	£49,102	Dec.. £7,803	15¾
Grand Trunk, three weeks ending April 3.....	123.800	119,000	Inc.. 4,200	3½
Denver & Rio Grande, first week in April.....	$6,656	$6,843	Dec.. $187	2¾
St. Louis, Iron Mt. & So., first week in April.....	71,900	65,220	Inc.. 6,680	10¼

Chicago Traffic.

For the week ending April 17 the following receipts and shipments are reported:

Receipts.	1875.	1874.	Inc. or Dec.	P. c.
Flour, bbls.....	59,725	65,864	Dec. 6,139	9.3
Wheat, bush.....	262,541	408,695	" 146,154	35.6
Corn, "	45,667	499,881	" 454,214	90.9
Grain of all kinds.....	459,788	1,169,738	" 709,950	60.7
Live hogs, No....	64,679	66,576	" 1.897	28.5
Cattle, No.....	19,462	18,955	Inc. 507	2.7
Shipments—				
Flour, bbls	52,898	60,092	Dec. 7,194	12.0
Wheat, bush.....	268 465	687,119	" 418,654	60.9
Corn, "	136,990	149,571	" 12,581	8.4
Grain of all kinds.....	529,312	1,037,158	" 507,c64	49.0
Live hogs, No.....	45,054	55,456	" 10.402	18.7
Cattle, No.....	16,671	14,276	Inc. 2,395	16.8

Here no signs are visible of a stimulation of traffic by the low rates; though so far as grain is concerned, the near approach of the opening of lake and canal navigation secures holders low rates for months to come.

Opening Lake Rates.

Sailing vessels have been chartered from Milwaukee at 5½ cents per bushel, for wheat to Buffalo, and 9½ to Oswego. For corn, from Chicago to Buffalo, 4¾ to 5 cents are the quotations. Lumber, to Chicago from Saginaw, is contracted for at $2.50 per thousand; from Bay City and Alpena, at $1.50.

Salt, from Bay City to Chicago, 15 cents per barrel; coal, from Cleveland to Milwaukee, 75 cents per ton. The steam barges in the lumber trade have agreed to accept not less than $1.75 from Bay City to Ohio ports, $2.50 to Buffalo, and $2.65 to Tonawanda. There are 27 steam barges and 135 tow barges in the lumber trade.

THE SCRAP HEAP.

Railroad Manufactures.

The Columbia Steel & Iron Company's rolling mill at Columbia, Pa., has been leased to Col. W. G. Case, who will start it up shortly.

A few weeks since the Baltimore & Ohio Railroad Company's rolling mill at Cumberland, Md., turned out in one week 1,005 tons of rails and 200 tons of bar iron, the heaviest week's work ever done in the mill.

The Bethlehem Iron Company at Bethlehem, Pa., has both its steel and iron rail mills in full operation. An addition to the mill is being built.

The New Albany Rolling Mills are turning out a lot of rails for the Louisville & Nashville road.

The Connellsville (Pa.) Car & Machine Works are building a lot of ore cars for the Green Lick Railroad, a new iron-mine branch of the Broad Ford & Mount Pleasant road. They are also at work on a large order for frogs of the Close pattern.

The Union Pacific Railroad Company's Rolling Mill at Laramie, W. T., was to be started up this week for the first time.

The Danville (Pa.) *American* says: "The difficulty or differences between the men and employers at the Pennsylvania Iron Works seems to have been amicably settled, and we hear the gratifying news that work will be resumed at an early day. The terms agreed upon grant to the men a regular scale of wages, based upon an average price paid at three other mills. This is just what the men asked, and it seems to be fair to both men and employers."

The Pittsburgh *Manufacturer* says: "The proprietors of the Allentown Rolling Mill have agreed to give their puddlers $4.00 per ton, it is stated, which is 25 cents more than their former offer. We believe this is what the puddlers demanded, but have no knowledge that they have gone to work."

The Cummings Car Works at West Bergen, N. J., are turning out a lot of freight cars for Barnum's Hippodrome.

The Pittsburgh Puddlers' Strike.

The strike which has lasted nearly 19 weeks is substantially at an end, and has resulted in a triumph for the strikers. Some of the larger mills have receded from the reduction of wages which was the cause of the trouble and have resumed work, paying $5.50 per ton, the old price. There is no doubt that the other mills will have to follow their example, however reluctant they may be. The only result is a loss of much time to the men and some trade to the mill-owners.

A Remarkable Furnace Record.

The Isabella Furnace at Pittsburgh has made during the six months ending April 1, 16,660 tons 1,240 lbs. of pig iron. The largest week's make was 702½ tons; average week's make, 640 tons 1,769 lbs. The largest day's work was 105 tons; average, 92 tons 105 lbs. The tons are of 2,240 lbs. About three-eighths of the iron made was foundry pig, the rest No. 1 mill pig. It is an 18 feet furnace, 75 feet high.

A New Style of Railroad Travel.

A correspondent of the Knoxville (Tenn.), *Whig and Chronicle* thus describes a recent journey over the Knoxville & Charleston Railroad:

"Precisely at 2 o'clock we were at the crossing near the coal yard, ready to take the train for Maryville. Said train consisted of one dump car, six by eight. The locomotives were two Americans of African descent. It was a mixed train; that is to say it was passengers, freight and mail, combined. But it was further mixed in complexion, Civil Rights having so far triumphed that first and second rate were condensed into one dump, and on this dump white and colored knew no distinction. To further complicate matters, mixed with this freight and mail, and Civil Rights was an undue proportion of divinity. Among the nine passengers were three ministers, and of the two locomotives, one was also a preacher.

"We started. This very important move was instituted as follows: Two poles with forks at the end were placed against the platform of the dump car; against the other end of the poles were placed old socks, stuffed with rags—against these were placed two shoulders of our locomotives aforesaid. Being thus coupled we began to move. Up grade we were pushed, down grade we took our locomotives on board, and let her drive. Thus alternately slow and fast, we reached Little River. Here the bridge being gone, we paddled our own canoe, or, what was better, we had a man to do it for us. The transfer being thus effected by piecemeal, we climbed the steep grade, and were greeted by two white locomotives and one dump car. One of said locomotives being also a preacher. At Pistol Creek we repeated the transfer, only in a worse canoe, but over a narrower stream. The setting sun found us at Maryville."

Wrought-Iron Driving-Wheels in America.

The Reading, (Pa.) *Times* says: "The first wrought-iron driving-wheels ever manufactured in this country were made by Mr. James Mullen, of this city. They were used on the engine 'Stag' which belonged to the Roadway Department of the Reading Railroad, and were made in the year 1847, at which time Mr. Mullen was Master Blacksmith of the Reading Railroad. They have been pretty much in use ever since. After the model then introduced the wheels have always been made, and it is but justice to say that there are no better driving-wheels in the country. Mr. Mullen has long since retired from the position he then held, but he still retains a warm interest in mechanical affairs."

The Baltimore Bridge Company.

The Baltimore *Gazette* says:

"The Baltimore Bridge Company, with its predecessors, Smith, Latrobe & Co., has, since the year 1866, designed and erected up to January 1, 1875, of

Wrought-iron trestle work	20,565	linear feet.
Fink suspension truss	12,934	" "
Triangular truss	10,334	" "
Quadrangular truss	10,475	" "
Solid and plate girders	2,256	" "
Total	56,564	linear feet.

Or over ten miles of bridging. About 1 per cent. of this amount is wooden bridging, 3 per cent. compound bridging, and 96 per cent. iron bridging. Five thousand and thirteen linear feet of the above amount has been sent by this company to Peru and Chili, and is now in daily use in those States. The remaining 51,551 feet has been erected in the United States."

Long Spars.

An exchange says:

"The Fitchburg Railroad recently delivered to Caldwell & Odiorne, sparmakers at Charlestown, Mass., two of the largest spars ever brought to this State. They came from Canada, and were cut and shipped on three long platform cars. They are of white pine, and the largest stick is 96 feet long and 42 inches at the butt and 32 inches at the tip in diameter. They were each sledded sixteen miles to the Grand Trunk road by twenty pairs of horses."

OLD AND NEW ROADS.

Boston & Maine.

This company and the Boston, Clinton & Fitchburg are organizing a new through line from Portland, Me., by way of Lawrence, Lowell, Framingham, Mansfield and Providence, taking the steamboat line from Providence or Stonington.

European & North American.

This company is desirous of raising $100,000 to cover the cost of changing the gauge of its road from 5 feet 6 inches to 4 feet 8½ inches. It has proposed that the Boston & Maine, the Eastern and the Maine Central should each advance one-fourth of the sum as a loan. The Maine Central Company has agreed to do so, provided the other companies also agree.

Dividends.

Dividends have been declared by the following companies:

Baltimore & Ohio, Main Stem, 5 per cent., semi-annual, payable May 1.

Baltimore & Ohio, Washington Branch, 5 per cent., semi-annual, payable April 17.

Meetings.

The following companies will hold their annual meetings at the times and places given:

Central of New Jersey, at the company's office in Jersey City, May 7, at 12 noon.

Delaware & Hudson Canal, at the office No. 71 Broadway, New York, May 11, at 12 noon.

Atchison, Topeka & Santa Fe, in Topeka, Kan., May 27.

Philadelphia & Reading.

Governor Hartranft of Pennsylvania has signed the bill providing for a special investigation into the affairs of this company and the Philadelphia & Reading Coal & Iron Company.

The Committee of Investigation is now in session in Philadelphia taking testimony upon the complaints made.

Buffalo Cross Town.

The bonds are shortly to be put upon the market and work begun. The object of the road is to connect the various lines entering Buffalo with each other and with the International Bridge. The section to be first constructed extends from a connection with the Buffalo Creek Branch of the Buffalo, New York & Philadelphia Railway, near the Hamburgh turnpike, through Ohio, Prime, Water, Joy and Erie streets to a junction with the New York Central and the Grand Trunk roads, near the latter street. The total cost of this part of the road is estimated at $150,000, inclusive of bridges and the right of way across private property. This is known as the water-front portion of the line. The estimates of the engineer are for a two-track road, and the cost of building it, irrespective of bridges or the right of way, has been placed at $50,000.

Poneganset.

The directors of this company recently held a meeting at Willimantic, Conn., with representatives of the people along the line in Connecticut, and it was agreed that an organization be completed at once to extend the road westward through Connecticut to the New London Northern road, with a view to making a complete line between Providence, R. I., and Springfield, Mass.

Chicago, Danville & Vincennes.

After the rehearing of the case, the United States Circuit Court has affirmed its former decision, holding that the Osgood foreclosure suit was rightfully removed from the Illinois Circuit Court and that the United States Court has jurisdiction in the case.

The meeting in New York last week was largely attended. The committee's report confirms the charges heretofore made against the officers of the company that the entire issue of $2,500,000 stock and $2,500,000 bonds was turned over to a contracting firm, in which the officers were interested; for the construction of the 108 miles of road from Dolton to Danville. The charges as to the over-issue of bonds on the Indiana Division subsequently built and the issue of $1,000,000 convertible bonds of doubtful legality in 1872, are also reasserted by the committee.

The committee also says that the provisions of the mortgages for sinking funds have been entirely disregarded. A fraudulent chattel mortgage on the equipment has also been executed. Reference is also made to the building of the line from Dolton to Chicago, first attempted by the Chicago, Danville & Vincennes *Railway* Company (a distinct organization) and afterwards completed by the Chicago & Southern Company. This line has been cheaply built, and is now entirely unfit for use.

The committee went over the line of the Chicago, Danville & Vincennes road, and found it in great need of repair. It had been cheaply built in violation of contract. There is not a stone culvert or a stone pier or abutment along the entire road.

The officers of the company obstructed the committee in its work and refused the members access to the books, so that they were unable to get a list of the stockholders and some other information desired. The stock was all issued without any consideration received. Reference is also made to the alterations in accounts and correspondence, which the receivers discovered. It is charged that the earnings of the road have been reported much larger than they really were.

The report finally advises bondholders to act promptly for themselves in procuring a foreclosure, and not to join with the officers and trustees in their action.

An agreement was finally adopted by the bondholders, in which they pledge themselves to act in harmony, and authorize the appointment of a committee to perfect a scheme for the purchase, reorganization and operation of the Chicago Danville & Vincennes road for the benefit of the bondholders. The committee to employ counsel and take full charge. The bondholders agree to pay an assessment not to exceed $1 per bond, to meet the expenses of any action that may be taken. The committee is as follows: F. W. Huidekoper, Meadville, Pa.; T. W. Shannon, Chandler Robbins, New York; John M. Denison, Baltimore; George W. Gill, Worcester, Mass.; A. A. Sumner, Albany, N. Y., and Mr. Hickok, of Homer, N. Y.

Illinois & St. Louis Bridge.

The bridge has been transferred to Morgan, Humphrey & Co., as representatives of the fourth-mortgage bondholders, the transfer being an amicable one and no opposition being made by the stockholders.

Erie & Pacific Despatch.

This fast freight line, which has heretofore been what is called a commission line, has been sold to the Great Western Despatch, which latter line is owned by the Erie Railway Company.

Kansas Pacific.

Another conference has been held in New York between the officers of this company and the Union Pacific. It is stated that at this meeting the details of the agreement made at Philadelphia recently were completed and that arrangements have finally been made to work the two roads more harmoniously together. This arrangement, it is said, includes the free interchange of business at Cheyenne; the abandonment of the proposed extension of the Colorado Central to Julesburg, as a competing line for Colorado traffic; the transfer of the completed section of the Colorado Central to the Kansas Pacific, and the election to the board of directors of the latter company of several representatives of the Union Pacific interest. In short, there is to be a general consolidation of interests.

The Railroad War.

There has been but little change in the condition of affairs and no important modifications in rates. The Baltimore & Ohio is now trying to secure business coming from the West to Pittsburgh, and to that end has lowered rates and is making extraordinary efforts to conciliate the Pittsburgh merchants. The freight thus secured, however, has all to be carried round by way of Cumberland, making a pretty long haul, the distance being 811 miles, against 469 by the Fort Wayne road.

New York & Long Branch.

Tracklaying has been begun on the southern end of the road, near Red Bank, N. J., where a switch has been put in to connect with the New Jersey Southern. The work will be pushed forward as fast as possible.

Western, of Alabama.

This road was sold in Montgomery, Ala., April 19, under a decree of the Court of Chancery. It was bought by W. M. Wadley and J. S. Davies for joint account of the Georgia Railroad Company and the Central Railroad Company of Georgia, both of which companies hold large amounts of the securities. The price paid was $3,129,166 01, the amount fixed by the Court.

The road extends from Selma, Ala., through Montgomery to West Point, 138 miles, with a branch from Opelika, Ala., to Columbus, Ga., 29 miles. It has been in default and in the hands of a receiver some time.

Macon & Brunswick.

In accordance with the orders of the Governor, Dr. E. A. Flewellen, Receiver, gives notice that he will sell this road at auction in Macon, Ga., on the first Tuesday in June next. The sale includes the road, the Brunswick wharf property, several tracts of real estate and 440 shares of Southern & Atlantic Telegraph stock. Payment may be made in cash, in Georgia State bonds, or in the company's first-mortgage bonds endorsed by the State.

Spartanburg & Asheville.

The grading on the first section has progressed as fast as the weather would permit and nearly 25 miles of the road-bed is ready for the ties. Work will be begun on the mountain section before long. The county commissioners of Spartanburg County have agreed to order an election upon the question of a county subscription of $100,000 in aid of the road.

Erie.

In the suit to recover certain sums from Mr. O. H. P. Archer, formerly contractor for handling the company's freight in New York and Jersey City, the New York Supreme Court has denied the motion for a receiver to take charge of the books and an injunction against their removal. Mr. Archer claims that the books relating to the contract are his private property.

A number of commuters from the New Jersey towns served by the road recently held a meeting and passed resolutions commending the management for the improvement both in the accommodations afforded to local travel and in the promptness and regularity with which trains are run. The resolutions were sent to the company and a suitable reply returned by the President and General Ticket Agent.

Louisville, Paducah & Southwestern.

The trustees under the first mortgage, Extine Norton and Philo C. Calhoun, have filed a bill in foreclosure in the United States District Court for Kentucky. The mortgage is for $3,000,000, and the interest has been in default since September 1, 1874. The appointment of a receiver is asked for, pending the suit.

The Baltimore Bridge Company has brought suit to recover $78,000, the balance due on certain bridges and trestles built for the company. The Bridge Company claims that the title to these structures has never been vested in the Railroad Company, and claims a lien on them prior to all other debts, including the first mortgage.

Memphis & Little Rock.

The report that this road was about to pass into the hands of the Louisville & Nashville Company is contradicted by authority.

Vicksburg, Shreveport & Texas.

The Receiver, Mr. J. W. Greene, has filed the required bonds and will take possession at once. He is ordered to make a report by June 1.

The road has been washed out between Waverley, La., and Tallulah by high water, and trains cannot pass the gap. Passengers and mails are transferred by hand cars and skiffs.

Vermont & Canada.

The contract for the sale of this road to the Central Vermont has never been completed, and now the latter company desires to modify it so as to have the conveyance and the mortgage to be given to the Vermont & Canada stockholders made expressly subject to all liens, claims, equities and liabilities in favor of third persons, to which the premises are liable. It is also proposed to substitute for the present directors three trustees to receive and hold the stock to be surrendered by the Vermont & Canada stockholders.

This modification would be yielding the point always claimed by the Central Vermont and resisted by the Vermont & Canada, that the debts incurred in the management of the trust were a prior lien to everything else on that road. The President and part of the board have issued a circular urging stockholders not to consent to any modification of the contract.

A special meeting of the Vermont & Canada Company is to be held April 29, to consider the question.

Pacific of Missouri.

In the case of Bailey and others against this company on appeal from the Circuit Court, the United States Supreme Court has given a decision reversing the decree of the lower Court as to the State tax and affirming it as to county and school tax. The Court holds that the 12th section of the act of the Missouri Legislature of 1852 was a contract exempting the railroad from taxation only for a limited time, and that the company is now liable to taxation for State and county purposes; also, that the mode of assessing the company for taxes for State purposes prescribed in that section is still in force until changed by some act of the Legislature.

Delaware & Pennsylvania.

This road is advertised to be sold at Sheriff's sale May 6. It is the Delaware end of the Pennsylvania & Delaware road and is 16 miles long, from Delaware City to the Pennsylvania line. It is operated by the Pennsylvania Railroad Company.

Chicago & Lake Huron.

The bridges on this road have all been repaired and trains are running regularly. The line through the city of Lansing, Mich., is to be changed somewhat, when the road from that place to Flint is completed.

Boston & Albany.

The Railroad Committee of the Massachusetts Legislature to which was referred the order of the Legislature directing the committee to ascertain and report in regard to the rela-

tions existing between the Boston & Albany Railroad and the Albany Bridge Company, reports: That no contracts exist between the Boston & Albany Railroad Company and the bridge company at Albany; that the tolls charged are in accordance with the rates established by the Canal Board of the State of New York; that the gross annual receipts have not been communicated to this committee; that no dividends have ever been declared since the construction of the bridge.

Perkiomen.

Work has been begun at the northern end of the road at Emaus, Pa. On the southern end the track is being laid from the present terminus at Pennsburg north nine miles to the South Mountain tunnel. It is expected that the tunnel will be finished by October and that the road will be completed soon afterward.

Hempstead & New York.

This road still continues to lie idle and no trains are run. The bondholders, it is said, intend to put it in order and equip it as soon as a decision is obtained as to the validity of certain bonds now in dispute.

Indianapolis, Bloomington & Western.

As showing the need of new rails, Superintendent Gimperling reports that in the month of January there were 964 rails broken on the line, and in two days in the early part of February 139 rails were broken. Much of the iron on the Indiana portion of the road has been down for three years, and some of it is of very poor quality.

The Opening of Navigation.

The lakes and rivers are beginning to be clear of ice, though somewhat later in the season than the average. The Upper Mississippi is generally clear as far as La Crosse.

On Lake Erie, steamers have begun to run between Detroit and Cleveland, and the eastern end of the lake is clear. On Lake Ontario a steamer from the Niagara River reached Oswego April 16. The southern end of Lake Michigan is open, and the ice is breaking up all over the lake. Latest advices report steamers running on Lake Erie from Toledo to Erie, so that navigation is fairly opened.

The Hudson River has been open to navigation for nearly a week, and preparations are being made to open the Erie Canal.

Baltimore & Ohio.

At the meeting of the board on April 14, a memorial signed by a large number of farmers and business men resident along the line was presented, praying for a reduction in the local freight rates, and also for the issue of commutation tickets for passengers. The committee who presented it were courteously heard and immediate attention to the subject promised.

Subsequently President Garrett made an address to the board, which is published elsewhere. The resignation of Mr. John W. Davis, the General Agent, was accepted.

The Baltimore *Sun* says:

"The only new feature in the railroad war is a break between the Baltimore & Ohio and the Philadelphia, Wilmington & Baltimore roads in the matter of freight rates. They had worked together since the late contest between the Baltimore & Ohio and the Pennsylvania railroads, as heretofore, on a minimum which the Philadelphia, Wilmington & Baltimore established for itself. The Baltimore & Ohio, however, desired that the other company should commute with it in the low rates at which it was taking freights out of New York as well as bringing them from the West for that city; but the latter road has recently, after negotiations, declined positively to descend below its fixed minimum. The Baltimore & Ohio, therefore, on Thursday put out posters in Philadelphia, ordering their west-bound freights to be delivered to the Chesapeake & Delaware Canal Company at Philadelphia. The Philadelphia road, however, is bringing whatever freights are offered it in Philadelphia to go west via Baltimore at lowest local rates, and transferring them to the Baltimore & Ohio depot."

The disagreement is understood to have nothing to do with the passenger business.

The General Superintendents' Meeting.

The regular semi-annual meeting to revise the time-tables of the through lines was held in New York, April 14; Mr. E. S. Flint, General Superintendent of the Cleveland, Columbus, Cincinnati & Indianapolis, presiding, and Mr. W. F. Allen acting as Secretary. A committee was appointed to prepare the revised time schedule for the coming summer, Mr. Charles Paine of the Lake Shore & Michigan Southern acting as Chairman. The committee was in session for several hours, delay being caused in arranging the time of the New Orleans roads. In the report of the committee, as adopted by the Convention, the time-tables are substantially the same as those of last summer. At St. Louis, the Southern line is given quicker time, and the Northern line will be run slower than formerly. The report of the committee embraced the recommendation that the change of time take place on Sunday, May 23. The Convention adjourned to meet at the Grand Pacific Hotel in Chicago on the second Wednesday in October next.

New Jersey Midland.

It is now reported that the arrears of rent due for the Middletown, Unionville & Water Gap road have been paid up and that the lessor company made no attempt and indeed had no desire to take advantage of the temporary default. The report that the road was to be transferred to the Erie, however, caused the Midland trouble in the loss of some valuable contracts with milk shippers.

Chesapeake & Ohio Canal.

A compromise has been effected on the coal rates from Cumberland, Md., to tide-water. The boatmen have agreed to reduce freight 10 cents per ton, making the rate $1.25 from Cumberland to Georgetown. The boat-owners have reduced the "trippage" charge $10, and the Canal Company will charge but $4.08 boat-toll on all boats included in the agreement, one-half to be payable at Cumberland, and half at Georgetown. It is understood, we believe, that if railroad freights are put up again, the old canal charges will be restored.

Cincinnati, Rockport & Southwestern.

The Engineer, Mr. Thomas H. Milligan, who is surveying the line from the present end of the track at the Spencer County line through the town of Huntingburg en route to Jasper, in Dubois County, has completed the location, and has succeeded in finding a good line, at a slight increase of cost over the former route, which left Huntingburg a mile and a half to the west. The contract will be let shortly, and the company hopes to have cars running to Jasper by July.

This extension was reported finished several months ago.

Delaware & Hudson Canal.

The new 7 per cent. coupon bonds, due in 1894, have been placed on the list of the New York Stock Exchange and are quoted 105 bid. The $2,000,000 of this loan negotiated by Messrs. Morton, Rose & Co., of London, are now officially quoted on the London Stock Exchange. The official statement of the company, submitted to the New York Stock Exchange when application was made to have the bonds put on the list, sets forth that the company has 108 miles of canal and 83 miles of railroad, besides the following leased roads: Albany & Susquehanna, 142 miles; branches, 36 miles, and Rensselaer & Saratoga branches, 181 miles. To provide means for the payment of $4,150,000 bonds, due respectively January 1, 1875, and April 1, 1878, and for the purchase of lots and construction of building in Cortlandt street, $1,250,000, the company decided to issue the $5,000,000 of bonds now put on the list, interest payable semi-annually, 1st of April and October. These bonds contain a convenant to the effect that if the property of the company in Pennsylvania, now unencumbered, should, at any time before the maturity of said bonds, be mortgaged, such mortgage shall include any cover these bonds and the debt by them represented. In accordance with the requirements of the Stock Exchange, the bonds already issued, which were lithographed, will be exchanged for engraved bonds, the latter being more difficult to counterfeit.

Union Pacific.

Travel between Laramie and Ogden was entirely suspended April 16, owing to the high water in the Bitter Creek Valley. The freshet washed out two bridges and covered the track for 10 miles, doing much damage. Later advices report several more small bridges destroyed and the track badly washed.

The company's suit against the Government is now on trial in the Court of Claims at Washington. This suit is instituted under the law of March, 1873, which directed the Secretary of the Treasury to withhold all cash payments for Government transportation, but authorized the company to bring a suit in the Court of Claims to determine its legal rights. The point involved is whether the Pacific railroads are liable to the Government for the immediate payment of the interest on the subsidy bonds, or whether the charters only require that the Government should retain 50 per cent. of the charges for its own transportation, crediting the companies therewith, and leaving the balance of their debt for interest advances to be paid when the subsidy bonds mature.

The new rolling mill at Laramie was to commence operations this week. It is expected that it will save the company a considerable part of the money now paid for rerolling and repairing iron.

Occidental & Oriental Steamship Company.

A telegram from London says that this company has chartered for its line from San Francisco to Japan and China the three large iron screw steamers Belgic, Celtic and Oceanic, now employed on the White Star Line between Liverpool and New York. The Oceanic has already sailed from Liverpool for Hong Kong by way of the Suez Canal.

East River Bridge.

Arrangements are being made for the speedy commencement of work on the anchorage for the cables on the New York side. The buildings now occupying the site will be removed at once, and the force employed on the Brooklyn anchorage, which is now finished, will be transferred to New York. Bids have been received for the cast-iron anchorage plates, of which there are four, to weigh 46,000 pounds each. The lowest bidders were Pusey, Jones & Co., of Wilmington, Del., at 3.9 cents per pound. Bids have also been received for the lumber.

New York Central & Hudson River.

Navigation being partly opened the usual summer tariff of local dates has been adopted, which is lower than the winter rates. The rates from New York to leading points are as follows per 100 pounds:

	First.	Second.	Third.	Fourth.
Albany	30 cents.	15 cents.	12 cents.	10 cents.
Schenectady	34 "	28 "	24 "	20 "
Utica and Rome	50 "	41 "	36 "	25 "
Syracuse	62 "	52 "	43 "	31 "
Auburn	70 "	58 "	47 "	32 "
Lockport	85 "	65 "	60 "	40 "

The company has, in conformance with the law, ordered a strict compliance with the order requiring passenger train employes to wear uniforms while on duty.

Quincy, Missouri & Pacific.

It is proposed to extend this road from its present terminus at Kirksville, Mo., westward a short distance into the coal region of North Missouri. Some large mines, it is said, can be reached by building eight or ten miles of not very expensive road.

Little Rock & Fort Smith.

The extension of 20 miles westward from Clarksville, Ark., is now finished, making the road 120 miles long. A further section of five miles is under contract.

Richmond & Danville.

New shops are to be built at Danville, Va., for the repair of machinery and cars.

Shenandoah Valley.

The recent annual meeting at Front Royal, Va., appears to have been anything but harmonious, and after a heated discussion as to the admission of certain parties to the meeting, it broke up and two boards were elected, one by the Central Improvement Company's stock, and the other by the county and some of the private stock, the latter, however, being in the minority.

Toledo, Peoria & Warsaw.

The trouble with the Keokuk Bridge Company has been settled and trains have again begun running into Keokuk.

Two coaches and 12 freight cars were seized lately at the State Line by an Indiana sheriff and were sold at Logansport under an attachment sued out by the Springfield Iron Company.

The company has submitted a proposition to the stock and bondholders, the substance of which is as follows:

1. To fund the coupons on the first-mortgage Eastern and Western Division bonds for 1¼ years from June 1, 1875, or with those past due, five coupons.

2. To fund the coupons on second-mortgage bonds 3½ years from April 2, 1875, or with those past due, nine coupons.

3. To fund the coupons on the consolidated Mortgage bonds three years, from May 2, 1875, or with those past due, nine coupons.

4. To fund the coupons on the Burlington Division bonds three years from June 1, 1875, or with those past due, nine coupons.

5. In consideration of the foregoing, stockholders to submit to an assessment of $10 per share.

All the net earnings of the road during the time for which the coupons are asked to be funded, and also any cash that may be received on account of the assessment of the stockholders, shall be used in putting the road in first-class order, and for the purchase, on satisfactory terms, of 1,000 box cars, now in use on the road, but belonging to other parties, who now receive the revenue from them. For the coupons so to be funded an interest bond will be given to cover all said coupons, making up and averaging the interest to Aug. 1, 1875, the interest on which bond at 7 per cent. will be payable in gold semi-annually, and the principal payable in 10 years in currency. For the security of this bond, and for the maintenance of their proper priority, the funded coupons will be deposited in the Farmers' Loan & Trust Company, or other bank or trust company, in the city of New York, so that in case of any future defaults in the payment of either the interest or principal of said interest bond, the holder thereof shall have the right to demand of said trustee the original coupon so deposited, which shall attach again to the bonds, and become a lien according to their original priority, and as additional security for said interest bonds. The assessments upon the stockholders shall be payable in cash or in the floating debt of the company at one year from the time that this agreement shall be signed by a majority of the bondholders and stockholders. The company shall also take in payment of said assessment the first preferred scrip, but they except from the floating debt the judgment obtained in the Fairbury fire cases, except such as shall be properly examined into, and only to such an amount as may be justly due.

This plan is devised to save the property for the stockholders, but it is questionable whether they will really be any better off if it is carried out, or whether the road will be able to carry the increased debt which it will have when the funding process is completed.

Cairo & St. Louis.

Regular trains began running over the extension from Murphysboro, Ill., to Cairo, Ill., April 19. The new track still requires much work to put it in good order, much of it having been laid when the ground was frozen. A temporary depot has been fitted up in Cairo.

East Line & Red River.

This Texas company, which has possibly been studying the financial scheme of the Great Southern Railroad Company and desires to improve upon it a little, purposes raising money to build its road by a "Grand Gift Concert," to be held in Jefferson, Tex., July 1. The cash prizes will amount to $550,000, and there are to be no blanks, for if any one is so unfortunate as to draw no cash prize, he will be allowed to take out the price of his ticket in land from the company's land grant. We are not informed of the price of tickets, but parties desirous of investing can doubtless find out by writing to Jefferson.

This is decidedly a new way of raising money for a railroad, but perhaps worse things have been done for the same purpose.

New York & Oswego Midland.

Some of the farmers in Sullivan County above Middletown have resumed possession of their land granted to the road for right of way, and have torn up the rails and plowed up the road bed. In one instance, at least, an injunction has been obtained against a party who had done so, from the United States Circuit Court.

Rome, Watertown & Ogdensburg.

The grading on the Lake Ontario Division is now completed from Charlotte, N. Y., as far west as Kendall's Corners, and tracklaying is to be begun next week. The company expects to run an excursion train from Kendall's Corners to Charlotte on the Fourth of July next, and the road will be completed and in operation from Charlotte to Lewiston by October 1. Regular trains are now running from Oswego through to Charlotte.

The Lockport people are raising subscriptions to build a branch from that town to the nearest point on the road.

The Illinois Tax on Capital Stock.

An injunction has been asked for to restrain the Indianapolis & St. Louis Company from paying and the tax collectors from collecting the taxes levied on it for 1874.

Pittsburgh, Washington & Baltimore.

The ordinance recently passed by the City Council of Baltimore and approved by the Mayor provides that upon the execution of the proper papers the city shall transfer to the Baltimore & Ohio Company all its interest in and claim on this road. The Baltimore & Ohio is to pay the city $1,000,000, the interest on which is to be paid semi-annually, and $40,000 of the principal on July 1 of each year until 1899, when the whole balance due shall be paid. The payment is to be secured by a mortgage on the property.

Northern Pacific.

In the United States District Court in New York, April 16, Gen. George W. Cass, President of the Company, was appointed Receiver. This action was taken at the instance of the bondholders' committee appointed at the meeting in March, and was not opposed by the directors of the company, all parties believing that the difficulties of the company can best be settled in this way. The suit is in bankruptcy.

The order of appointment gives the Receiver the usual powers, and directs him to apply the net earnings, after paying current operating expenses, to the payment of balances due for labor and materials; to the payment of sums due for right of way and grounds; to the repayment of money borrowed for current expenses or to pay interest, and to the payment of all officers and others who have become liable for the company as security in legal proceedings or by other similar obligations.

New York, New Haven & Hartford.

Mr. H. L. Goodwin, of East Hartford, a stockholder who has made himself somewhat prominent by his opposition to the pass system as well as to other things about the present management, has applied to the Connecticut Superior Court for an injunction to restrain the company from issuing the usual annual passes to members of the Legislature. The Court granted a preliminary injunction and set the full hearing down for the July term. As the preliminary injunction holds until then and the Legislature meets in May, members will have to go without their passes this year. The injunction extends to all other officers of the State and indeed to all persons holding official positions.

The New Haven *Union* says: "It is rumored that the Consolidated road is threatened with a number of lawsuits. The cause of the trouble is briefly as follows: A number of commuters at the New York end of the road having been furnished with commutation tickets, are said to have taken advantage thereof to convey large bundles to and fro for which a consideration was received. The Adams Express Company authorities learning of this infringement of their rights complained. The railroad company then revoked their commutation tickets, and are said to have refused to allow commuters to pass into the Grand Central depot with packages exceeding a certain size in their hands. The commuters believe that they can resist this regulation, and as stated are rumored as about to bring suits."

Dixon & Maine Prairie.

Arrangements are being made to build a narrow-gauge road from the town of Dixon, in Solano County, Cal., to Maine Prairie Landing, a distance of 12 miles. The country is level and the road can be cheaply built.

West End Narrow Gauge.

The contract for completing the grading and laying the rails on the first section of 5½ miles from Grand avenue, in St. Louis, to Rinkle's, was let to Dewey & Co., of Litchfield, Ill., they being the lowest bidders.

St. Paul & Pacific.

At a meeting of holders of the first-mortgage bonds of the main line, in New York, recently, it was voted to remove the present trustees, Horace Thompson, George L. Becker and W. G. Moorhead, and to appoint as trustees in their places Thomas Denny, Thomas W. Pearsall and Jacob S. Wetmore.

It is understood that these trustees will prosecute the suit to recover the 16,000 tons of rails bought out of the proceeds of the bonds in 1871, and now in possession of the United States. This iron was originally pledged as security for money advanced by Jay Cooke & Co.; it was afterwards transferred by them to their London house, Jay Cooke, McCulloch & Co., and by that firm pledged to the United States as security for the deposits held

by them as agents for the Navy Department. The bondholders claim the iron on the ground that the trustees and contractors had no right to pledge it, as it was part of the property covered by the mortgage.

Poughkeepsie & Eastern.

This road was sold in Poughkeepsie, April 14, under foreclosure of the first mortgage, and was bought for $50,000 by Mr. George Pelton as agent for the bondholders. The road is 43 miles long, from Poughkeepsie, N. Y., northeast to a connection with the Connecticut Western at State Line. The bondholders will organize a new company.

Columbus & Toledo.

At the annual meeting in Columbus, O., April 14, the stockholders resolved that a final effort be made to increase the subscriptions to the stock to $1,000,000, to secure the beginning of the work. In case this amount cannot be raised by June 1, the directors are instructed to take the necessary steps to abandon the enterprise and dissolve the company. The amount heretofore subscribed is about $850,000.

St. Joseph & Topeka.

This road, better known as the Wathena & Doniphan Cut-off, is to be sold at sheriff's sale, May 8, to satisfy a judgment obtained by the bondholders. It is 18 miles long, from Doniphan Junction, Kan., on the Atchison & Nebraska, to Wathena on the St. Joseph & Denver, and with those roads makes a line from Atchison to St. Joseph, on the Kansas side of the Missouri.

Monticello & Port Jervis.

Under orders of the Supreme Court testimony has been taken before a referee as to the claim of A. M. Smith against the company. Mr. Smith advanced $26,000 in gold to the company to pay interest with, and received as security 1,500 coupons, which he subsequently deposited with the Union Trust Company. Mr. Smith now claims a right to come in with the bondholders in the foreclosure and to share with them in the proceeds of the sale. The bondholders, on the other hand, claim that he has only an ordinary creditor's lien for money loaned. The referee's report has been presented to the court but not yet confirmed.

Ashley River.

Books have been opened in Charleston for subscriptions to the stock of this company, whose road is to connect the Savannah & Charleston with the Northeastern road outside the city. The capital stock is fixed at $150,000, and the corporators are G. I. Cunningham, C. S. Gadsden, A. F. Ravenel, A. C. Richmond and C. O. Witte.

Northeastern.

The annual meeting was held in Charleston, S. C., April 7, but no quorum of stock being represented an adjournment was had until November 18.

Louisville & Nashville.

Sam. Tate, M. J. Wicker and others have begun suit to recover from this company a sum of about $300,000 alleged to be due them for services in connection with the transfer of the South & North Alabama road.

Louisville, Cincinnati & Lexington.

At a recent meeting of the creditors of this road in Louisville, Mr. A. S. Hatch was present and stated that negotiations had been completed for the money necessary to finish the Big Sandy road to a connection with the Chesapeake & Ohio. He said that the increase of business which this connection will bring to the Louisville, Cincinnati & Lexington would enable that company to meet all its obligations without doubt, and it was therefore warranted in asking bondholders to fund their coupons until 1876 in deferred interest certificates. A proposition was also made to the floating debt creditors, the details of which are kept private.

Mississippi River Rates.

The complete summer rates between Chicago and western points by way of the Mississippi River are as follows to the leading points:

CHICAGO TO	First class, per 100 lbs.	Second class, per 100 lbs.	Third class, per 100 lbs.	Fourth class, per 100 lbs.	Salt, cement, plaster in car-loads, per bbl.	Grain per 100 lbs.	Flour per barrel.
McGregor, Ia	$0 65	$0 55	$0 40	$0 30	$0 50	$0 23	$0 46
La Crosse, Wis	0 65	0 55	0 40	0 30	0 41	0 21	0 42
Winona, Minn	0 65	0 55	0 40	0 30	0 50	0 23	0 46
St. Paul	0 75	0 65	0 45	0 30	0 50	0 23	0 46
Minneapolis	0 75	0 65	0 45	0 30	0 50	0 23	0 46
Winnebago City	1 30	1 10	0 85	0 65	....	....	....
St. Peter	1 10	0 95	0 70	0 55	....	....	....
New Ulm	1 25	1 15	0 90	0 65	....	....	....

The Keokuk Northern Line will run on the river in connection with the Illinois Central road, and the Diamond Jo Line in connection with the Northwestern and the Milwaukee & St. Paul.

Long Island.

At the annual meeting, April 13, there was an almost complete change in the management, only three of the old board being re-elected, and they are understood to have been opposed to the Charlick rule. Mr. Charlick, who has been President for many years and has absolutely controlled the management, was dropped. It is expected that there will be many changes on the road.

Wilmington & Reading.

At a meeting of the bondholders in Philadelphia, April 14, a committee was appointed to inquire into the past management. This committee is authorized to foreclose the second mortgage and have the road sold, also to buy it in, if deemed advisable, and to take the necessary steps to organize a new corporation. The members of the committee are D. H. Beecher, Henry Bushong, Hugh De Haven, Charles S. Snyder and George M. Troutman. The bondholders agree to pay an assessment of 0½ per cent. on their holdings, to meet necessary expenses.

Marion & Ottawa.

This company has filed articles of incorporation in Indiana. The road is to begin at Marion, in Grant County, and to run east by north through Huntington, Wells and Adams counties to the Ohio line, a distance of about 50 miles. The capital stock is to be $500,000.

Kansas Central.

It is said that this road will be extended this season from Holton, Kan., to the Vermillion River, about 20 miles.

Mississippi Valley & Western.

This road was sold at auction in St. Louis, Mo., April 14, under a decree of foreclosure of mortgage. The finished line, from Keokuk, Ia., to Hannibal, Mo., 52 miles, was sold to A. B. Stone, of Cleveland, O., for $600,000, the minimum price fixed by the court. Mr. Stone is a large bondholder, and is said to represent others also. He also bought for $12,500 the partly finished road west of Canton, Mo. A new company is to be organized at once with the intention of completing the road.

Davenport & St. Paul.

The agent of the German bondholders has appointed Mr. H. A. Gardiner, an engineer and lately connected with the Michigan Central, to make a thorough inspection of the property and to report on its present condition, and also what is needed to make it a paying line. His report will probably determine what course the bondholders will take.

Texas, Mississippi River & Northwestern.

On application of the bondholders, the United States Circuit Court has appointed a receiver to take possession of this road pending proceedings in foreclosure. The bonds are largely held by the owners of the Little Rock & Fort Smith road.

The company was formed about 18 months since by the consolidation of the Little Rock, Pine Bluff & New Orleans and the Mississippi, Ouachita & Red River. It owns a line from Chicot Ark., on the Mississippi west by north to Pine Bluffs, 74 miles, and another from Chicot west to Monticello, 36 miles.

The Chicot end of the Pine Bluff line was recently washed away for seven miles by the high water in the Mississippi.

Hanover & York.

Work has been resumed on this road, and the rails are being laid on the Hanover end. The grading on that section will be finished in a few days. On the York end the grading will soon be completed, when track-laying will be begun at that end also.

Burlington & Lamoille.

At a special meeting of the board in Burlington, Vt., April 7, the contract for the construction of the road was approved, except in some minor points. A committee was appointed to make such suggestions in regard to the contract as might seem best and to report to the President, who was authorized, on the revision of the contract, to execute it in behalf of the corporation, the contract being conditioned upon the towns of Essex and Cambridge rendering the aid voted by them.

New Brunswick.

This company has been refused permission to build a bridge over the St. John River at or near Fredericton, N. B., on the ground that such a bridge would interfere too much with navigation.

Charlotte, Columbia & Augusta.

The depot of this road in Charlotte, N. C., was burned on the evening of April 16, with a large amount of freight, including 3,000 bales of cotton. The offices of the North Carolina Railroad were also destroyed with a number of other buildings. The loss to the railroads is estimated at $250,000, but most of the cotton was insured.

Illinois Railroad Legislation.

Among the bills passed at the last session of the Legislature were the following:

Senate Bill No. 90. An act relating to lessees in this State of railroads in adjoining States.

House Bill No. 38. Authorizing the formation of union depots and stations for railroads in this State.

House Bill No. —. To prevent fraud upon travelers and provide for putting a stop to "scalpers" dealing in railroad and steamboat tickets.

House Bill No. 427. Providing for levying a tax for the payment of interest on the railroad bonds issued by counties, cities and towns, and to provide a sinking fund for the payment of the principal.

Oregon & California.

The bondholders' protection committee in Frankfort-on-the Maine announces that it is able to pay 1.70 per cent. for the coupons due April 1, to those bondholders who have deposited their bonds under the agreement with Ben Holladay. Only a few of the bonds remain out, they say.

Rockford, Rock Island & St. Louis.

Mr. Osterberg, the agent of the German bondholders, writes from Chicago to Frankfort under date of March 6 that the road had been earning $20,000 to $25,000 net monthly since the Receiver took possession, and that this had been applied to the reduction of the floating debt which has a prior claim to the mortgage debt. The amount of these preferred claims was about $200,000.

ANNUAL REPORTS.

Sioux City & St. Paul.

This company owns a line from St. James, Minn., southwest to Le Mars, Ia., 124 miles, and it leases from the Illinois Central the use of 24 miles of track from Le Mars to Sioux City. It is an extension of the St. Paul & Sioux City and has the same officers and substantially the same ownership.

The company has a land grant of 230,121.16 acres in Minnesota and of 396,695.76 acres in Iowa. Of the latter, 212,671.86 acres has not yet been deeded to the company, and the title to part of it is in dispute with the McGregor & Missouri River Company.

The Land Department reports for 1874 sales of 31,977.04 acres and 22 town lots for $34,567.04, making total sales of 53,099.32 acres and 409 town lots for $457,049.68. The actual receipts for principal and interest of land contracts had been $420,602.35, of which $387,702.51 was paid in bonds of the company.

The equipment owned by the company consists of 11 engines; 6 passenger and 3 baggage cars; 285 box and stock, 93 platform and 8 caboose cars; one-half share in a business car.

The property is represented as follows:

Capital stock ($22,581 per mile)	$2,800,000
Funded debt ($19,234 per mile)	2,385,000
Total ($41,815 per mile)	$5,185,000

During the year $294,500 bonds were sold. The construction account was increased by $201,486.53.

The earnings of the road for the year ending December 31 were as follows:

	1874.	1873.	Inc. or Dec.	P. c.
Freight	$175,519 81	150,149 43	Inc $25,370 38	17.0
Passenger	61,619 01	51,325 72	Inc.. 10,293 29	20.0
Express	5,583 33	4,093 27	Inc.. 1,490 06	36.4
Mail	8,784 02	6,085 89	Inc.. 2,698 13	44.3
Miscellaneous	29,608 90	13,033 61	Inc.. 16,575 29	127.0
Total	$281,115 07	$224,687 92	Inc..$56,427 15	25.0
Operating expenses	191,749 79	273 549 65	Dec.. 81,799 86	30.0
Net earnings	$89,365 28			
Deficiency		$48,861 73		
Earnings per mile..	$1,899 00	$1,518 00	Inc.. $381 00	25.0
Per cent of expenses	68 00	121 00	Dec.. 53 00	43.8

The increase in earnings has been mainly on through business, and the receipts from through and local traffic were nearly equal.

The work done during the year was as follows:

Passenger-train mileage	91,338
Passengers carried	22,598
Passenger mileage	1,334,738
Freight-train mileage	99,339
Tons freight moved	84,812
Tonnage mileage	8,540,481

The tonnage moved westward was 74.5 per cent. of the total. Lumber formed 54 per cent., flour and wheat 18.9 per cent. of all the tonnage. The mileage of loaded cars was 65.6 per cent. of the total, the average load for loaded cars being 8.67 tons, and for all cars 4.1 tons. The average passenger train consisted of three cars, carrying 14.5 passengers; the average freight train of 15 cars with 86 tons of freight.

Receipts and expenses per train-mile and per unit of traffic were as follows:

	Receipt.	Cost.	Net.
Passenger train-mile	$0.831	$0.779	$0.052
Freight train-mile	2.065	1.214	0.851
Per passenger per mile	0.0465	0.0436	0.0029
Per ton per mile	0.0205	0.0141	0.0064

The mileage and cost for repairs of engines and cars was as follows:

	Mileage.	Average per engine or car.	Cost per mile for repairs.
Engines	248,044	22,549	6.75 cents.
Passenger cars	137,007	22,835	3.78 "
Baggage and mail cars	137,007	45,664	1.00 "
Freight cars	1,525,726	3,952	0.70 "

The average cost of engine service per mile run was 24.09 cents.

Payments from income were:

Taxes	$9,762 12
Rental of Illinois Central track	18,900 00
" Le Mars Elevator	920 00
Interest account	177,456 30
Total	$207,038 42

These payments exceeded the net income by $117,678.14, the deficiency being provided for from other sources.

Marietta, Pittsburgh & Cleveland.

This company owns a line from Marietta, O., northward to Canal Dover, 100 miles. A short section of the line was in an unfinished condition at the opening of the year, and the road was not opened for through traffic until May 25, 1874. It is not yet fully completed, very steep temporary grades being in use at several points where tunnels are to be built hereafter, work on them being now in progress.

In February last the company resolved to retire all former issues of bonds and put a consolidated mortgage on the road. This was done, and $3,500,000 bonds were put upon the market in England, realizing $2,700,000 or 77.14 per cent. of their face. Of the bonds sold 50 per cent. were paid for in August last, 20 per cent. called for in December, and the remainder is payable as called for. All the old second-mortgage bonds have been retired, and 1,350 of the first-mortgage bonds, the remaining 150 being provided for.

The Auditor's report shows expenditures outside of operating expenses as follows:

Real estate, construction, buildings, shops, etc	$272,906 09
Engines and cars	115,462 29
Interest	164,980 00
Total	$553,348 38

The earnings of the road for the year ending December 31, 1874, were:

Earnings from passengers	$48,358 69
Freight	73,934 79
Mail	3,159 97
Express	3,422 44
City Branch	3,516 80
Miscellaneous	812 27
Total earnings ($1,402 per mile)	$133,204 96
Operating expenses (69.43 per cent.)	92,487 25
Net earnings ($429 per mile)	$40,717 71

The coal business was very light the last half of the year, owing to the depression of the iron trade, while early in the year the unfinished condition of the road prevented it from securing business.

A large part of the President's report is taken up by an elaborate argument against the justice or expediency of fixing rates by law.

St. Paul & Sioux City.

This company owns a line from St. Paul, Minn., southwest to St. James, 122 miles. It is extended to Sioux City, Ia., by the Sioux City & St. Paul road, which is under the same management, but maintains a separate organization and makes separate reports.

The equipment of the road consists of 14 engines and one dummy; 6 passenger and 4 baggage and mail cars; 193 box and stock, 53 platform and 6 caboose cars; one-half share of a business car.

The company has a land grant amounting to 904,981.09 acres, of which 832,613.80 acres have been deeded to it and 72,317.29 acres certified but not yet deeded. A title to a part of the latter is in litigation with the Winona & St. Peter Company. Deeds have been given and contracts are outstanding for 139,019.14 acres, the total purchase money of which is $850,428.27. The total receipts up to the close of 1874 for principal and interest were $632,382.41, and the land contracts outstanding amounted to $329,935.51. The sales during 1874 were 11,881.97 acres for $86,615.37, an average of $7.29 per acre. The grasshopper visitation and other causes materially reduced the sales. The company holds $144,300 of its own stock and $100,000 stock and $70,000 bonds of the Sioux City & St. Paul.

The property is represented as follows:

Capital stock (419,672 per mile)	$2,400,000
Preferred stock, second issue	534,900
" " third issue	426,500
" " special	183,900
" " 8 per cent	454,700
" " fourth issue	400,000
Total preferred stock ($16,393 per mile)	$2,000,000
Bills payable	295,284
Current accounts	65,053
Total	$4,760,337

It is recommended that the preferred stock be consolidated in one class, with a lower rate of interest.

The earnings for the year ending December 31 were as follows:

	1874.	1873.	Inc. or Dec.	P. c.
Freight	$382,338.47	$391,755.99	Dec..$9,417.52	2.4
Passenger	136,927.00	132,194.33	Inc .4,732.67	3.6
Mails	12,497.86	10,037.95	Inc...2,459.91	24.5
Express	5,583.32	5,392.00	Inc... 191.32	3.6
Miscellaneous	7,843.07	455.87	Inc... 7,389.20	1,627.6
Total	$545,189.72	$539,836.14	Inc. $5,355.58	1
Work'g exp'ses.	393,318.02	463,772.89	Dec..70,454.87	15
Net expenses	$151,871.70	$ 76,061.55	Inc. $75,810.15	100
Gross earnings per mile	$4,468.00	$4,423.00	Inc... 45.00	1
Net earnings per mile	1,244.60	623.00	Inc... 621.00	100
Per cent. of expenses	72	86	Dec... 14	16.3

Through freight has increased, although the rates were low owing to competition, while local freights have decreased owing to short crops. The increase in passenger receipts was entirely on through passengers, and was owing to the running of through cars from St. Paul to Council Bluffs.

The net earnings were less than the taxes, interest and insurance paid by $72,249.19.

In the Iron Department over 1,000 tons of iron and 45,000 cross ties were used in renewing and repairing track, and about seven miles of line in the Ottawa Marsh section have been raised. The machinery expenses are higher than they would be, were permanent and sufficient shops substituted for the present temporary ones at Shakopee.

The work done was as follows:

Passenger train mileage	130,006
Passengers carried	69,747
Passenger mileage	2,967,242
Freight train mileage	123,894
Tons freight carried	164,826
Tonnage mileage	12,311,263

The average receipts per passenger and per ton per mile were:

	Receipts.	Expenses.	Net.
Passenger per mile	4.61 cents.	4.55 cents.	0.06 cents.
Ton per mile	3.105 "	1.94 "	1.165 "

The west-bound tonnage was 50.5 per cent. of the whole. Of the passenger receipts, 82.6 per cent., and of freight receipts 72.9 per cent. were from local business. The mileage of loaded cars was 74 per cent. of the whole mileage. The average load of each loaded freight car was 8 tons; average of all cars 5 tons. On an average each train handled 55.8 passengers or 140 tons of freight in its trip, the average constant load being 22.8 passengers or 99 tons of freight. Of the whole tonnage, lumber was 36.42 per cent.; wheat and flour 33.28 per cent.

The cost and receipts per train mile were:

	Receipts.	Cost.	Net.
Passenger	$1,192	$1,184	$0,008
Freight	3,149	1,932	1,217

The mileage of engines and cars with cost for repairs was as follows:

	Mileage.	Average mileage.	Cost per mile for repairs.
Engines	370,232	24,682	11.82 cents.
Passenger cars	280,012	43,335	4.90 "
Baggage and mail cars	195,009	48,752	2.00 "
Freight cars	2,000 924	8,133	1.16 "

The total cost of engine service was 31.41 cents per mile.

Camden & Atlantic.

This company owns a line from Camden, N. J, southeastward across New Jersey to Atlantic City, 60 miles, and leases the May's Landing Railroad, from Egg Harbor City south to May's Landing, 7 miles. It also owns and operates a ferry across the Delaware from Camden to Philadelphia.

The equipment consists of 11 engines; 27 first-class and 25 second-class passenger, 2 smoking, 2 mail and 8 baggage cars; 46 box, 58 flat, 13 four-wheel lime and 3 timber cars; 1 wrecking car. A new baggage car was built and two passenger cars rebuilt during the last year, and six lime cars were built to replace old ones broken up. One locomotive was purchased.

The capital account is as follows:

Common stock	$377,400 00
Preferred stock	838,050 00
" " scrip	419 58
Total stock ($20,264 per mile)	$1,215,869 58
First-mortgage bonds	490,000 00
Second " "	500,000 00
" " scrip	250 65
Bonds and mortgages on real estate	85,900 00
Total bonded debt ($17,936 per mile)	$1,076,150 65
Current accounts	23,098 92
Balance of profit and loss	174,864 84
Total	$2,489,983 99

Dividends of 7 per cent. on the preferred and 3½ per cent. on the common stock were paid. The company is now entirely free from floating debt. The amount added to construction account was $10,891.87.

The earnings for the year ending December 31 were as follows:

	1874.	1873.	Inc. or Dec.	P. c.
Passengers	$314,062 51	$308,429 50	Inc $5,633 01	1¾
Freight	136,419 58	129,394 86	Inc.. 7,024 72	5¾
Miscellaneous	30,359 02	25,567 53	Inc.. 4,791 49	18¾
May's Landing Br..	3,601 18	3,799 28	Dec.. 198 10	5¼
Road earnings	$484,442 29	$467,191 17	Inc..$17,251 12	3¾
Ferry "	45,444 51	41,804 86	Inc.. 3,639 65	8¾
Total "	$529,886 80	$508,996 03	Inc.. 20,890 77	4⅛
Working expenses..	238,904 87	257,891 04	Dec.. 18,986 17	7⅜
May's Landing Br..	7,419 93	9 613 29	Dec.. 2,193 36	22¾
Road expenses	$246,324 80	$267.5 4 33	Dec..$21,179 53	7⅞
Ferry "	41,814 91	30,904 39	Inc.. 10,910 52	35⅓
Total "	$288,139 71	$298,408 72	Dec..$10,269 01	3½
Net earnings	$241,747 09	$210,587 31	Inc..$31,159 78	14¾
Road earn. per mile.	$7,230 00	$6.973 00	Inc.. $257 00	3¾
Per cent. exps	50.85	57.26	Dec.. 6.41	11¼

The work of the year were as follows:

	1874.	1873.
Through passengers	97,622	93,858
Way "	332,539½	302,202½
Excursion "	68,842	67,648
Total "	498,996½	463,708½
Tons freight moved	112,714	104,540¾
Engine mileage	219,175	216,246
Receipts per mile run	$2 19	$2 14
Expenses " "	0.9591	1.10
Net earnings " "	1,2309	1.04

A new depot has been built in Camden, containing also the general offices. There were put in the track 695¼ tons of new rails, 1,014 tons of repaired rail and 19,500 new ties. There are now 35 miles of road laid with T rails, leaving 25 miles of the old ∩ rail still in the main track. The bridges are all in good repair.

Terminal Charges on Canal Grain at New York.

The Committee appointed by the Senate of the New York Legislature to investigate the management of the canals of the State, was instructed at the instance of Senator Jarvis Lord of Rochester, to inquire into the terminal expenses to which canal traffic is subject, as expressed in the following resolution:

"*Resolved*, That the Canal Committee are hereby requested to ascertain and report to this body the prices charged in the city of New York upon the following transfers of grain at that port: Price charged for elevating grain from canal-boats: prices charged to the seller and to the buyer of grain, and to the vessel receiving the grain; also, whether these prices are exacted by the rules and regulations of any association, corporation, or combination in that city; also, what charges are collected from canal-boats for the use of slips and wharves or port charges; also, that the same information be ascertained and reported by the Canal Committee as relates to the City of Buffalo; also, that the committee have power to send for persons and papers."

In accordance with this resolution, the Chairman of the Senate Committee addressed a letter to the Secretary of the New York Produce Exchange in which he said:

"Will you please give us, at your earliest convenience, a detailed statement of all the information you have as to each inquiry made in the resolutions. We wish to get at the exact charges on grain when it comes into your port if sold in your market or shipped to another port, either by elevators, commission men, slip, pier, wharf or other charges, say, for the past four years. Please give me the best and most minute information on the matter at your earliest convenience."

The following is the reply of the Secretary of the Exchange:

NEW YORK PRODUCE EXCHANGE,
NEW YORK, April 12, 1875.

Hon. D. H. Cole, Chairman Senate Committee on Canals, Albany:

DEAR SIR—We have already acknowledged the receipt of your communication of the 7th inst. and its inclosure, and promised to give you the requested information as soon as it could be prepared. We will now furnish the information as called for by the Senate resolutions which have been referred to you for investigation; and take this opportunity to thank you for the uniform courtesy which has been extended to delegates from this Exchange who have visited Albany from time to time, in connection with legislative action affecting the interests of our city and State in canal matters.

In justice to our organization we should state at the outset that the New York Produce Exchange has nothing whatever to do, either directly or indirectly, with fixing the rates of compensation of its members for their services in the various branches of business in which they are engaged. This is left entirely to private arrangement and competition. We believe this explanation to be necessary for your information because the resolutions as introduced by the member from Rochester contains the inference that we are parties to certain alleged exactions upon the commerce of this port, and enforce them with the power of rule and regulation. Grain arriving at this port is subject to the following charges:

1. Towing, to and from the place of delivery, $12, and this is paid by the consignee of the grain.

2. Unloading of canal-boat, three-quarter cent per bushel, paid by captain or owner of the boat.

3. Weighing of the cargo, three-quarter cent per bushel, one-half of which is paid by the consignee of the grain and one-half by the purchaser.

4. If the grain goes into store or warehouse, there is no extra charge for thirty days, the items as above in memorandum one, two and three covering the storage for the time. For every additional ten days beyond the thirty there is a further charge of one-quarter cent per bushel.

5 If grain goes on board an ocean vessel in bags, there is a charge in addition to that named in memoranda 1, 2 and 3 of five-eighths of a cent per bushel for putting the grain in bags and delivering on board the ship, and an additional charge of thirty cents per ton to the stevedores for stowing away properly in the hold, both of these charges being paid by the ship.

6. If the grain goes on board an ocean vessel in bulk there is a charge, in addition to memoranda 1, 2 and 3, of eight-tenths of one cent per bushel for delivery on board the ship, trimming and stowing properly in the hold, and this is paid for by the ship.

7. If the grain goes on board coasting vessels, sloops or schooners, there is a charge, in addition to memoranda 1, 2 and 3, of twenty-five one-hundredths of one cent per bushel for delivering the cargo, trimming and stowing in hold, and this charge is paid by the vessel.

8. If the purchaser desires the grain cleaned by blowing from it the dust and refuse matter, it is done at his expense, at a charge of one-fourth of one cent per bushel.

9. The rate of wharfage is regulated by statute law, and is fifty cents per day for an outside berth for each boat. The captain or owner of the boat pays the wharfage.

To recapitulate: The cost for handling grain, in addition to towage and wharfage, is as follows: First, grain delivered to store, including thirty days' storage free, ⅛ cent; second, grain delivered to ocean vessels in bags, about 2 22½-100 cents; third, grain delivered to ocean vessels in bulk, 2 80-100 cents; fourth, grain delivered on coasting vessels, 1 75-100 cents; fifth, if grain is cleaned, there is an additional charge on each of the above of ¼ cent.

The elevating and transferring of grain is mainly carried on by private firms, there being but two stock companies engaged in the business here. The charges as herein stated have been generally agreed to by common consent, and they are not exacted by any rule or regulation of any association, corporation or combination, but are regulated by the common rule of supply and demand and the usual competition for business in all trades. It must be conceded that a business requiring so large an outlay of money as is necessary in the building of elevators should be fairly remunerated. The property is of a perishable nature, and they are subject to seasons of great depression and dullness, by the failure of crops or the absence of any export demand for grain. The cost of receiving and holding grain in stores at this port has been one and three-fourths cents less, for the first thirty days it is held, for two years past, than was formerly charged.

Many of our merchants think the charge for transferring grain from canal-boats to ocean vessels is larger than it ought to be, and particularly at this time, when all parties should be willing to do all they can to draw to this port the large production of the West; and to meet this feeling we understand it is the intention of the men controlling the floating elevators to make a reduction which will be satisfactory to all concerned. The gentlemen engaged in this business are deeply interested in any measure of reform which will tend to increase the receipts of grain at this port, for they have invested in floating and stationary elevators and in warehouses no less than $5,000,000.

We have endeavored to give you a full reply to all the inquiries you have made, and if it is not sufficiently plain we will be glad to explain more fully either by letter or a personal interview with your committee.

With respect, I have the honor to be very truly yours,
WILLIAM H. PHILIPS, Secretary.

President Garrett on the Railroad War.

At the monthly meeting of the Board of Directors of the Baltimore & Ohio Railroad held in Baltimore April 14, President Garrett made a speech which is reported as follows in the Baltimore *Gazette:*

"GENTLEMEN: In connection with the declaration of the usual semi-annual cash dividends of five per cent. on the Main Stem and on the Washington Branch of the Baltimore & Ohio Company, I congratulate you upon the splendid and singularly satisfactory results of the hostilities waged by the Pennsylvania Railroad Company against this company. We have the returns of the earnings of the Main Stem and branches for the month of March, during the whole of which the efforts of the Pennsylvania Company to injure our interests were made with their highest ability, and the result shows an increase in the gross earnings of the Baltimore & Ohio Company for that month over the same month in 1874 of $103,773.92. Notwithstanding the largely diminished charge for passengers, the results show an increase of revenue upon this Main Stem from this source of 45 per cent. The earnings of the Chicago Division are also shown to be $100,624.81, being an increase of more than 50 per cent. upon the revenue of the preceding month. The developments of this controversy have proven to be of the highest importance not only to railway companies generally, but to the leading interests of the country, and the gravity of the subject makes proper a further sketch of its origin and history."

The grounds of the refusal of the Baltimore & Ohio Company to join in the "Saratoga Agreement," heretofore published, are reviewed; fast freight lines denounced as "vampires upon the railway system," and the abolition of commissions on freight and passengers, and the discarding of middle men generally commended, and the course of the Baltimore & Ohio Company defended. Referring to a correspondence with the Pennsylvania Railroad Company in December last relative to freight rates on petroleum, Mr. Garrett says the policy of his company has built up the trade of Baltimore in this article, its moderate and judicious action controlling trade that might otherwise have gone to other cities. Of the present business prospect Mr. Garrett says:

"How gratifying, gentlemen, to see around you, notwithstanding the calamitous depression of trade in other cities, the activity, vigor and extent of business transacted in your midst. Our manufacturers and our merchants are largely prospering under the effects of what was designed as merely hostility to the Baltimore & Ohio Company. And the Pennsylvania Railroad Company, following the lead of our Company, has made its passenger rates so low to Baltimore, in order to drive the Baltimore & Ohio Company from its position, that large numbers of business men from all parts of the country are coming to Baltimore to reap the advantages of the low charges, both for travel and transportation."

The management of the Pennsylvania Company and several of its branches is severely criticised, and the rates fixed by the Pennsylvania Company in Baltimore are pronounced "utterly unremunerative." The financial condition of the Pennsylvania Company, the New York Central & Hudson River and Baltimore & Ohio companies are compared, Mr. Garrett making a favorable showing in favor of the latter. He says:

"Let the battle go on! Already the consumers and producers in all parts of the United States have had their attention directed to the economies of the port of Baltimore and its ample supplies of goods of every description at the lowest prices, and to the fact that it has a great line of railway absolutely determined (as it has comparatively and assuredly the power to do) to maintain at all times moderate rates for the transportation of imports and exports to and from the port of Baltimore. This determination is based upon wise and just principles, and will result in enforcing its policy, which will make the entire country appreciate that Baltimore presents another great and economical port on the Atlantic, with vast and increasing advantages, and furnishes the cheapest and best entrepot for large sections of the South and Southwest, West and Northwest."

The controversy between the Northern Central and Baltimore & Ohio companies in 1867, relative to the transfer of passengers and baggage to and from Washington, before the building of the Baltimore & Potomac Railroad, is reviewed, and the course of the Pennsylvania road in refusing the Baltimore & Ohio the use of the Camden & Amboy road from Philadelphia to New York pronounced extraordinary, and the statements made by the Pennsylvania Company in this connection are characterized as "gross misrepresentations."

Mr. Garrett then says:

"Every artificial obstruction placed in the way of traffic from the Baltimore & Ohio road to Philadelphia and New York serves to add business to Baltimore and daily increases the great sympathy and support of the West and the South, and leads to sustaining the Baltimore & Ohio road and the city of Baltimore; and for the clear reason that bonds of mutual interest are being thus effectively strengthened. Obstruct the movements of passengers; and freight between Baltimore & Philadelphia and Baltimore and New York, and those very passengers stop at Baltimore, examine its advantages as a market, purchase their goods, avail themselves of the low freights from this city and become its customers and cordial friends.

"Another contrast of economy of working seems to show the ability of the Baltimore & Ohio Company to maintain itself in any competition which the Pennsylvania Company may desire. President Scott states that his charge for terminal expenses, viz: for the transfer at New York, by putting cars on floats between Jersey City and New York, of five cents per hundred pounds, 'is not sufficient to cover the actual cost of the work done.' The Baltimore & Ohio Company has a similar transfer, performed in the same manner, between Locust Point and Canton, and the actual cost of this transfer is less than the half of one cent per hundred pounds. Surely there must be strange elements in this 'actual cost' on the part of the Pennsylvania Railroad to loom up into such an extravagant comparative figure."

Mr. Garrett says an epoch has been reached in the history of this struggle; that the Pennsylvania Company having failed in its attacks, has been reinforced by the representatives of the New York Central and the Erie companies, and the struggle has now become one to maintain the policy of the Baltimore & Ohio Company against the combined power of the greatest railways on the Continent. He predicts that victory is certain for the Baltimore & Ohio Company.

"Whether this conflict continues for a long or a short period, gentlemen, I judge it will be your determination that the policy of preserving the independence of this company shall be maintained.

"As your Executive I deem it a privilege to battle, and if necessary to make a sacrifice for the great object in view.

"Our stockholders are largely identified with the interests of Baltimore and with the interests upon our lines. The massive business pouring over our roads gives employment to the many thousands in our service. The pay of our employes in the States through which our lines pass is distributed among the farmers, the tradesmen and the general population. We aid progress everywhere, build up all our local interests, and add to the prosperity of a great, growing and beautiful city. Are we expected to decline the maintenance of our views—the maintenance of our fixed policies, based on sound principles—when the worst efforts that the Pennsylvania Company can make against us are shown to be that they are compelled to aid us in building up the city of Baltimore, and in making it understood in every direction throughout the country that Baltimore presents the greatest advantages and inducements for commercial transactions?

"We have the satisfaction of knowing that at this period investors from New York and Chicago are purchasing real estate in our suburbs, and merchants from many quarters are arranging to transfer their homes to our city, and among the gratifying results attendant upon these railway difficulties are the constant and increasing prosperity of our community."

In concluding his address, Mr. Garrett said the responsibility for the continuance of the present state of affairs rests with the President and Directors of the Pennsylvania Company, and no part of the responsibility rests with the Baltimore & Ohio Company.

After remarks by Messrs. Banks, Cheston and others, sustaining the policy and action of the company, a resolution was unanimously adopted, approving of the maintenance of the policy of the company by President Garrett, after which the Board adjourned.

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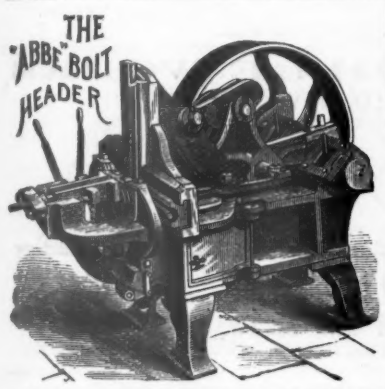

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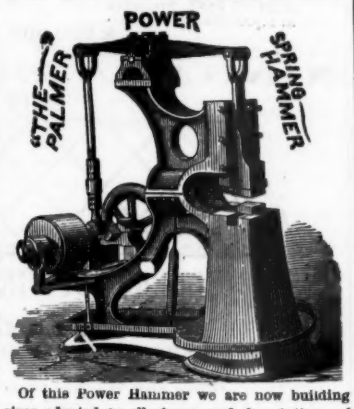

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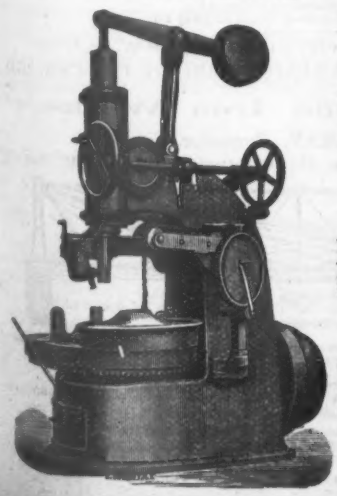

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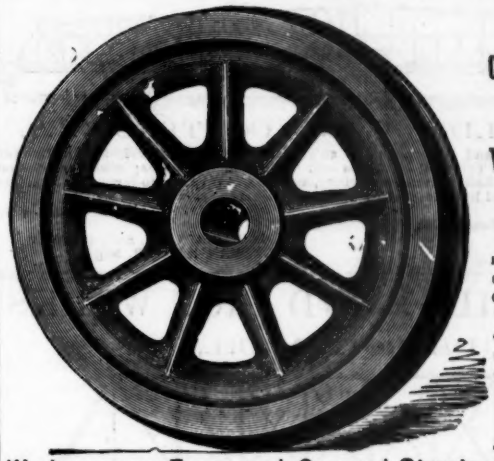

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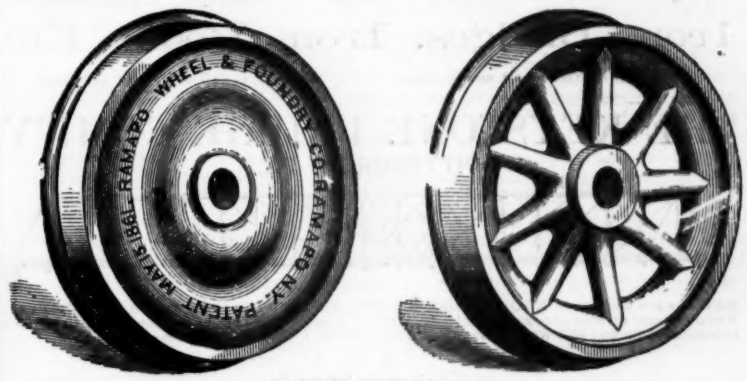

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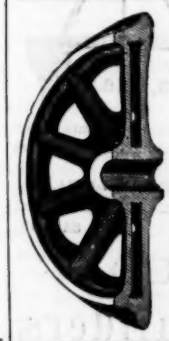

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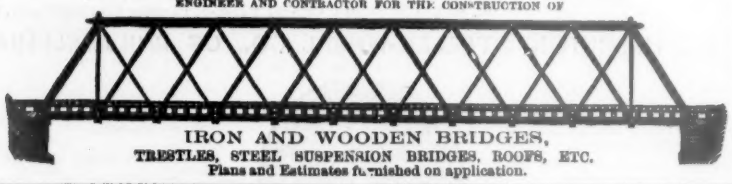

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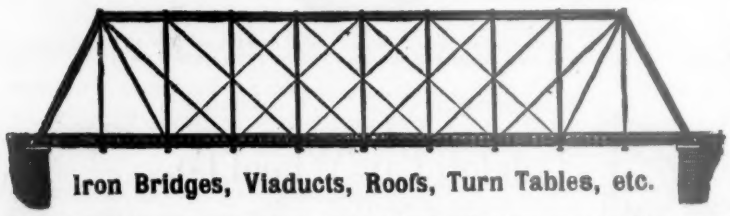

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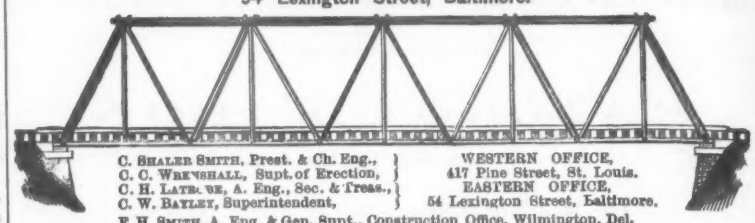

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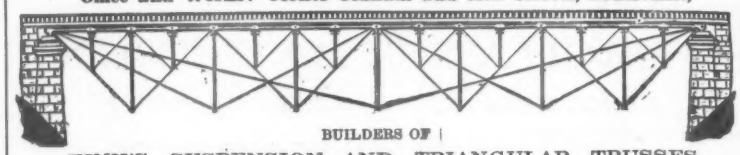

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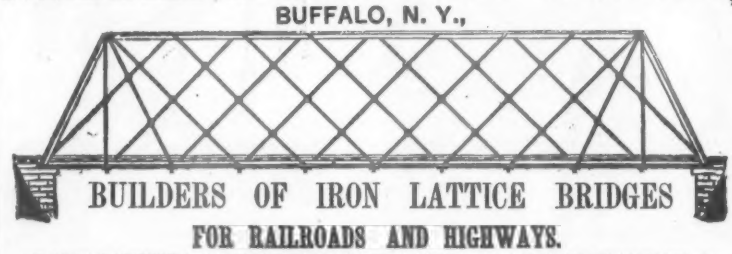

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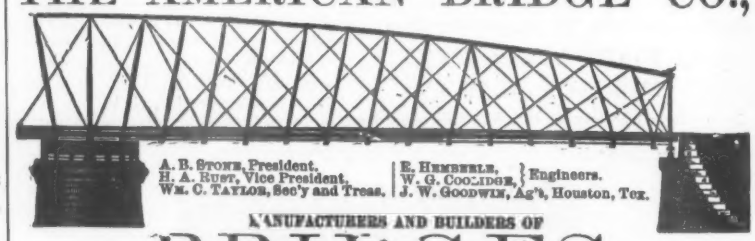

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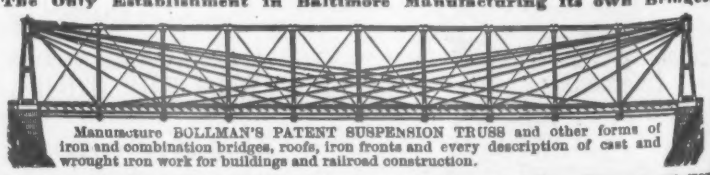

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